

**TOWN OF
AGAWAM, MA**

**North Street
Culvert
Replacement**

**Bidding
Documents For
Construction**



**Project No. 0234052.00
Town of Agawam, MA**

woodardcurran.com

June 2023

SECTION 00 01 07

SEALS PAGE

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

Date of Issue: June 21, 2023



Scott Medeiros, P.E.
Woodard & Curran, Inc. (Engineer)

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SECTION 00 01 10

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SECTION 00 11 16

INVITATION TO BID

Town of Agawam, MA (Owner) invites Bidders to submit Bids for the North Street Culvert Replacement Project, which includes replacement of an existing culvert conveying flow from White Brook beneath North Street (a MassDOT classified urban minor arterial roadway), construction of an additional culvert beneath an adjacent private driveway, installation of stormwater structures and piping, and the rehabilitation of the existing roadway and surface conditions adjacent to the crossing culverts; and all materials and equipment, construction, and services inherent to the Work.

The Work shall be substantially complete within **60 calendar days** from the commencement of Contract Time and completed and ready for final payment within **90 calendar days** from the commencement of Contract Time.

The Project being bid is subject to Massachusetts General Laws, Chapter 30, Section 39M.

This Project is to be funded in part with monies made available through the American Rescue Plan Act (ARPA) and compliance with certain Federal provisions is required.

A mandatory pre-Bid conference will be held at 1:00 p.m. local time on June 28, 2023 at Department of Public Works conference room, located at 1000 Suffield Street, Agawam, MA, 01001. **Bidders are required to attend and participate in the conference.** Bids may not be accepted from Bidders who fail to attend the mandatory pre-Bid conference.

Sealed Bids will be received until **1:00 p.m. local time on July 18, 2023** by Owner at Town of Agawam, 1000 Suffield Street, Agawam, MA 01001, Attention: Jennifer Bonfiglio, Chief Procurement Officer. Bids will then be publicly opened and read aloud. Bids received after the time of announced opening will not be accepted.

Bidding Documents **may be obtained electronically at no cost on or after June 21, 2023 at 1:00 p.m.** by registering with the Engineer's bidding team (Issuing Office) via email at MunicipalBids@woodardcurran.com and subject line "**Agawam MA – North Street Culvert Replacement**" to obtain the Bidding Documents and other related public information. Instructions for downloading the Bidding Documents and accessing other related public information will then be provided by email. Documents from third parties are not considered official Bidding Documents.

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 or any portion thereof provided by third parties, or for modifications to the Bidding Documents not made by official Addenda, 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.

Prevailing 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 prevailing wage rates for those trades people who may be employed for the proposed Work under the resulting Contract. Federal Minimum Wage Rates as determined by the United States Department of Labor under the Davis-Bacon Act also apply to this Project.

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, not to be responsible or eligible. Owner may also reject the Bid of any Bidder if Owner reasonably 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

INSTRUCTIONS 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 Sets 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 or any portion thereof 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 Bidders' 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, OTHER RELATED DATA, AND SITE

4.01 *Subsurface and Physical Conditions*

- A. Section 00 73 10 of the Supplementary Conditions identifies:
 - 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. Copies of reports and drawings referenced in Section 00 73 10, if any, are included in the Bidding Documents as indicated in Section 00 31 00. Those reports and drawings are not part of the Contract Documents, but the “technical data” contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.02 of the General Conditions, has been identified and established in Section 00 73 10 of the Supplementary Conditions.
- C. Bidder is responsible for any interpretation or conclusion Bidder draws from any “technical data” or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

4.02 *Underground Facilities*

- A. Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site is based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

4.03 *Hazardous Environmental Condition*

- A. Section 00 73 10 of the Supplementary Conditions identifies any reports and drawings known to Owner relating to a Hazardous Environmental Condition identified at the Site.
- B. Copies of reports and drawings referenced in Section 00 73 10, if any, are included in the Bidding Documents as indicated in Section 00 31 00. Those reports and drawings are not part of the Contract Documents, but the “technical data” contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.06 of the General Conditions has been identified and established in Section 00 73 10 of the Supplementary Conditions.

- C. Bidder is responsible for any interpretation or conclusion Bidder draws from any “technical data” or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.
- 4.04 Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 4.02, 4.03, and 4.04 of the General Conditions and Section 00 73 10 of the Supplementary Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 4.06 of the General Conditions and Section 00 73 10 of the Supplementary Conditions.
- 4.05 Upon request, Owner may provide Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid. Bidder shall be responsible for obtaining permission and necessary permits and insurance for access to the Site. Bidder shall clean up and restore the Site to its former condition upon completion of any such explorations, investigations, tests, and studies. Bidder shall comply with all applicable Laws and Regulations relative to excavation and utility locates.
- 4.06 Reference is made to Article 7 of the General Conditions and Section 00 73 10 of the Supplementary Conditions for the identification of the general nature of other work that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) that relates to the Work contemplated by these Bidding Documents. On request, Owner will provide to each Bidder for examination access to or copies of contract documents (other than portions thereof related to price) for such other work.
- 4.07 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. visit the Site and 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. carefully study 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, 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, as containing reliable "technical data";
 - E. consider the information known to Bidder; 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 any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder's safety precautions and programs;
 - F. 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 within the times required, and in accordance with the other terms and conditions of the Bidding Documents;
 - G. 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;
 - H. 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;
 - I. 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
 - J. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.
- 4.08 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this 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 mandatory pre-Bid conference will be held as indicated in the Invitation to Bid. Bidders are required to attend and participate in the conference.
- A. Bids may not be accepted from Bidders who fail to attend the mandatory pre-Bid conference.
- 5.02 Addenda will be issued to all prospective Bidders of record considered necessary in response to questions arising at the conference as indicated in Article 7. Oral statements may not be relied upon and will not be binding or legally effective.

ARTICLE 6 – SITE AND OTHER AREAS

- 6.01 The Site is identified in the Bidding Documents. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by Owner unless otherwise provided in the Bidding Documents. 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 Engineer in writing by email as follows.

Woodard & Curran, Inc.
Kendra Dow
Email: kdow@woodardcurran.com
(and a copy to rtsantoulis@woodardcurran.com)

- 7.02 Interpretations or clarifications considered necessary in response to such questions will be issued by Addenda to all parties recorded as having received the Bidding Documents. **Questions must be received by 5:00 p.m. local time on July 7, 2023 to be answered. Questions received thereafter may 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 and all parties recorded as having received the Bidding Documents will be notified by email that Addenda has been posted along with instructions for accessing the Addenda.

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 maximum 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 apparent Successful Bidder will be retained until Owner awards the Contract to such Bidder, and such Bidder has furnished the required Contract security, insurance documentation and met the other conditions of the Notice of Intent to Award or Notice of Award, and executed the Contract Documents, whereupon the Bid security will be released. If the Successful Bidder fails to furnish the required Contract security, insurance documentation, and meet the other conditions as stated in the Notice of Intent to Award or Notice of Award, and execute and deliver the Contract Documents, Owner may consider Bidder to be in default, annul the Notice of Intent to Award or Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner’s exclusive remedy if Bidder defaults.
- 8.03 The Bid security of other Bidders that Owner believes to have a 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.
- 8.04 Bid security of other Bidders that Owner believes do not have a chance of receiving the award will be returned within 5 days after the Bid opening.

ARTICLE 9 – CONTRACT TIMES

- 9.01 The number of days within which, or the dates by which, the Work is to be substantially completed and ready for final payment are set forth in the Agreement.

ARTICLE 10 – LIQUIDATED DAMAGES

- 10.01 Provisions for liquidated damages, if any, are set forth in the Agreement.

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, or those substitute or “or-equal” materials and equipment and construction methods or procedures as defined in Paragraph 6.05 of the General and Supplementary Conditions, approved by Engineer and identified by Addendum for proprietary items specified only.

- A. The materials and equipment and construction methods or procedures specified for proprietary items in the Bidding Documents establish a standard of required type, function and quality to be met by any proposed substitute or “or-equal” item. No item of material or equipment and construction methods or procedures will be considered by Engineer as a substitute or “or-equal” item unless written request for approval has been submitted by Bidder and has been received by Engineer at least 15 days prior to the date for receipt of Bids.
 - B. Each such request shall conform to the requirements of Paragraph 6.05 of the General and Supplementary Conditions.
- 11.02 The burden of proof of the merit of the proposed item is upon the Bidder. Engineer’s decision of approval or disapproval of a proposed item will be final. If Engineer approves any proposed item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner.

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 completed 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 general 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 or manager 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.
- 13.13 Substitutions and "or-equal" items for proprietary items specified must be summarized and fully explained in accordance with Paragraph 6.05 of the General and Supplementary Conditions. Bids that do not comply with these requirements may be considered non-responsive and may be rejected at the discretion of the Owner.

ARTICLE 14 – BASIS OF BID; COMPARISON OF BIDS

14.01 *Bid Pricing*

- A. Bidders shall submit a Bid on a lump sum basis as provided for in the Bid Form. Bid price shall be stated in both words and figures.
- B. Discrepancies between prices written in words and prices written in figures will be resolved in favor of prices written in words. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

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, and Supplements as listed in the Bid Form, 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 IFB number (if any), 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.**” **Bids shall be addressed as indicated in the Invitation to Bid.**
- 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 in hard copy to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Such modifications and withdrawals may not be transmitted by email.
- 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 may 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, not to be responsible or not to meet the specified qualification or quality requirements, based on poor references or otherwise. Owner may also reject the Bid of any Bidder if Owner reasonably 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.
- 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.
- 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 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 responsible and eligible Bidder, offering the lowest price for the Bid and whose Bid is in the best interests of the Project or public, subject to available funding
- 19.07 Proposed substitutes and “or-equal” items for proprietary items specified, may be rejected or accepted unilaterally by Owner its sole discretion. Requests that are general, make reference to Bidder’s standard terms and conditions, are a wholesale substitution of the terms and conditions of the Bidding Documents, or that make reference to Bidder’s descriptive information as a whole are not acceptable.
- 19.08 The Owner will issue a Notice of Intent to Award to the Successful Bidder in the form included in Bidding Documents. Within 15 days of receipt of the Notice of Intent to Award, the Successful Bidder shall comply with the conditions set forth therein and provide requested information. After required reviews and approvals by Owner of bonds and insurance documentation and other conditions, the Owner may issue a Notice of Award in accordance with Article 21.

ARTICLE 20 – CONTRACT SECURITY AND INSURANCE

- 20.01 Article 5 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner’s requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the executed Agreement to Owner, it shall be accompanied by such bonds.
- A. In case the bonds or insurance documentation submitted by the Successful Bidder do not meet the requirements of the Contract Documents, and changes are to be made before these documents can be accepted by the Owner, the Successful Bidder is obligated to accept an extension of the date of award of the Contract, or the date of issuance of Notice to Proceed, as the case may be, for that period of additional time required to furnish acceptable documents.

ARTICLE 21 – SIGNING OF AGREEMENT

- 21.01 After required reviews and approvals by Owner of bonds and insurance documentation and other conditions set forth in the Notice of Intent to Award, Owner will issue a Notice of Award to the Successful Bidder. When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by unsigned counterparts of the Agreement along with the other Contract Documents which are identified in the Agreement and attached thereto. Within 10 days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to Owner. After required reviews and approvals, Owner shall deliver one fully signed set of Contract Documents to Successful Bidder with a complete set of the Drawings.

ARTICLE 22 – RETAINAGE

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

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

23.01 Provisions regarding 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 – SAFETY AND HEALTH REGULATIONS

24.01 The 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, as a minimum, and other specific requirements identified in the Supplementary Conditions.

ARTICLE 25 – EQUAL EMPLOYMENT OPPORTUNITY, ANTI-DISCRIMINATION, AND AFFIRMATIVE ACTION

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

ARTICLE 26 – WAGE RATE REQUIREMENTS

26.01 Wage rate requirements, if any, are set forth in the Supplementary Conditions.

ARTICLE 27 – SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

27.01 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 or modify the Instructions to Bidders. 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. Bidders are solely responsible to determine, obtain, review and interpret the full text of applicable Laws and Regulations. Representations, certifications, compliance statements and forms relating to the subject matter in this Section are included in Section 00 45 05 and must be submitted by each Bidder as part of its Bid. Failure to do so may render a Bid non-responsive.

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*.
- B. The Bid and Contract are subject to 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*.
- C. Pursuant to Paragraphs 19.01 and 19.06 of the Instructions to Bidder, Bidders must be “eligible” as defined by MGL Chapter 30, Section 39M.

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 1 surety company, the surety companies shall be jointly and severally liable.”

1.03 APPLICABLE 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 Intent to 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 (NOT corporate) from the Commonwealth of Massachusetts Department of Revenue (NOT Secretary of State) 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 Intent to Award. Bidders are encouraged to obtain such Certificate of Good Standing online at

<https://www.mass.gov/how-to/request-a-certificate-of-good-standing-tax-compliance-or-a-corporate-tax-lien-waiver>

See explanation, instructions, and sample 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 Intent to 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 (samples at the end of this section); and
 - To DCAMM - An audited financial statement for the most recent completed fiscal year.
- 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 prevailing 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 prevailing wage rates for those trades people who may be employed for the proposed Work under the resulting Contract. See Section 00 73 43.
 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 Safety and Health Regulations of the U.S. Department of Labor set forth in Title 29 CFR, Part 1926 and to all subsequent amendments, and to 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*.

1. In addition, MGL Chapter 30, Section 39S, requires 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 documentation of successful completion of said course shall be submitted 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.
2. Comply with the State and Federal COVID-19 guidelines and procedures for the construction sector (as may be amended).

H. **Special Licensing**

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. **Public Records:** The Bid and Contract are 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 Bidder agrees to provide the Owner copies of any documents requested under this law at no charge to the Owner or the requestor.

- J. **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.

1.04 FEDERAL PROVISIONS

- A. This Project is to be funded in part with monies made available through American Rescue Plan Act (ARPA) and compliance with certain Federal provisions is required including the following. See detailed requirements included in Section 00 73 74.
1. ***Minority businesses, women's business enterprises, and labor surplus per 2 CFR Part 200 Subpart D §200.321*** which covers taking affirmative steps to assure firms are used when possible.
 2. ***Domestic preference for procurement per 2 CFR Part 200 Subpart D §200.322*** which covers providing a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products).
 3. ***Procurement of recovered materials per 2 CFR Part 200 Subpart D §200.323*** which covers compliance with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, as applicable.
 4. ***Access to records per 2 CFR Part 200 Subpart D §200.337*** which covers allowing access of records by Federal government representatives.
 5. ***Prohibition on certain telecommunications and video surveillance services or equipment 2 CFR Part 200 Subpart D §200.216*** which prohibits obtaining equipment or services from certain foreign entities
 6. ***Per Appendix II to Part 200 - Contract Provisions for Non-Federal Entity Contracts Under Federal Awards***
 - a. ***Equal Employment Opportunity requirements*** per 41 CFR 60 and in accordance with Executive Order 11246, "Equal Employment Opportunity"
 - b. ***Contract Work Hours and Safety Standards Act*** (40 U.S.C. 3701-3708)

- c. *Davis-Bacon Act, Federal minimum wage rates and Copeland Anti-KickBack Act (40 USC 3145)*. In case of discrepancy between Federal and state wage rates, the higher wage rates shall apply. See Section 00 73 43.
 - d. *Clean Air Act (42 U.S.C. 7401-7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as amended*
 - e. *Debarment and Suspension (Executive Orders 12549 and 12689)*
 - f. *Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)*
7. Applicable provisions of the United States Code of Federal Regulations govern the Bidding Requirements and resulting Contract, and any provision in violation of the foregoing shall be deemed null, void and of no effect. Where conflicts between the Code of Federal Regulations and state Laws and Regulations exist, the more stringent requirement shall apply.
8. This Project is subject to the Safety and Health Regulations of the U.S. Department of Labor set forth in Title 29 CFR, Part 1926 and to all subsequent amendments, and to any applicable Massachusetts Regulations. Bidders shall be familiar with the requirements of these Regulations.

ATTACHMENTS

- A. MA Department of Revenue – Instructions for Requesting a Certificate of Good Standing-Tax Compliance or Corporate Tax Lien Waiver
- B. Sample Certificate of Good Standing and/or Tax Compliance
- C. Accounting Controls Letters MGLc30s39R

END OF SECTION

Mass.gov

DOR Certificate of Good Standing and/or Corporate Tax Lien Waiver FAQs

Businesses and individuals: Learn how to request proof you're in good tax standing by requesting a Massachusetts DOR Certificate of Good Standing and/or Corporate Tax Lien Waiver with MassTaxConnect.

Updated: May 13, 2022

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What is a Certificate of Good Standing and do I need one?

A DOR Certificate of Good Standing is the answer when individuals, businesses and other organizations need proof they've filed and paid their Massachusetts taxes in order to:

- Sell a business
 - Some corporations are required to also obtain a Corporate Tax Lien Waiver.
- Obtain financing
- Renew or transfer a liquor license
- Verify a marijuana license
- Gain employment with the Gaming Commission and other agencies

- Participate in the [HireNow Program](/news/baker-polito-administration-launches-hirenow-hiring-and-training-employer-grant-program) (/news/baker-polito-administration-launches-hirenow-hiring-and-training-employer-grant-program)
- Enter into other business transactions.

DOR does not charge a fee to obtain a Certificate of Good Standing.

How do I apply for a Certificate of Good Standing?

DOR recommends that individuals, businesses and other organizations obtain a Certificate of Good Standing with [MassTaxConnect](https://mtc.dor.state.ma.us/mtc/_/) (https://mtc.dor.state.ma.us/mtc/_/). It's fast, easy and secure.

For individuals and businesses registered with MassTaxConnect

- Log in to [MassTaxConnect](https://mtc.dor.state.ma.us/mtc/_/) (https://mtc.dor.state.ma.us/mtc/_/).
- Click on **More**
- Under **Other Actions**, select **Request a Certificate of Good Standing**
- Under **Enter - Application Type**,
 - Go to the right-hand side, under **Required**,
 - Select from the following dropdown list:
 - Certificate of Good Standing (standard)
 - Gaming Commission
 - Liquor License
 - Liquor License Transfer
 - Marijuana License Verification
 - Professional License Renewal
 - Waiver of Corporate Tax Lien.
- Complete application and **submit**.

Visit the video tutorial [How to File for a Certificate of Good Standing When You are Logged In](https://www.youtube.com/watch?v=apSWETA8r4Q&list=PLfBnwDVE7DgGsk_WprAIk_BVQvxUgUtvk&index=3) (https://www.youtube.com/watch?v=apSWETA8r4Q&list=PLfBnwDVE7DgGsk_WprAIk_BVQvxUgUtvk&index=3).

For individuals and businesses NOT registered with MassTaxConnect

- Go to the [MassTaxConnect](https://mtc.dor.state.ma.us/mtc/_/) (https://mtc.dor.state.ma.us/mtc/_/) homepage.
- Under **Individuals**, select **Request a Certificate of Good Standing**.
 - **Note:** Non registered businesses must also choose **Individuals**.
- Under **Enter - Application Type**,
 - Go to the right-hand side, under **Required**,

- Select from the following dropdown list:
 - Certificate of Good Standing (standard)
 - Gaming Commission
 - Liquor License
 - Liquor License Transfer
 - Marijuana License Verification
 - Professional License Renewal.
- Complete application and **submit**.

Please note

- If you must apply by paper, select [Request for a Certificate of Good Standing and/or Tax Compliance or Waiver of Corporate Tax Lien \(/doc/request-for-a-certificate-of-good-standing-and-or-tax-compliance-or-waiver-of-corporate-tax-lien/download\)](#).
 - Processing of a paper application can take 4 to 6 weeks. DOR **strongly recommends** filing your request online.
- If approved, the Certificate of Good Standing will be mailed within 24-48 hours.
 - Approved certificates can also be printed through MassTaxConnect.
- DOR does not charge a fee to obtain Certificate of Good Standing.

What is a Corporate Tax Lien Waiver and do I need one?

A Corporate Tax Lien Waiver (along with a Certificate of Good Standing) is the answer for corporations that are being sold.

DOR does not charge a fee to obtain a Corporate Tax Lien Waiver.

Keep in mind:

- Limit Liability Companies can only obtain a Corporate Tax Lien Waiver if they file and pay corporate returns.
- Non-Profit corporations can not obtain a Corporate Tax Lien Waiver.
- Sole Proprietors can not obtain a Corporate Tax Lien Waiver.

How do I apply for a Corporate Tax Lien Waiver?

DOR recommends that businesses and other organizations obtain a Corporate Tax Lien Waiver with [MassTaxConnect](https://mtc.dor.state.ma.us/mtc/_/) (https://mtc.dor.state.ma.us/mtc/_/). It's fast, easy and secure.

- Log in to [MassTaxConnect](https://mtc.dor.state.ma.us/mtc/_/) (https://mtc.dor.state.ma.us/mtc/_/).

- Select the **More** tab
- Under the **Other Actions**, choose **Request a Certificate of Good Standing**
- Under **Enter Application Information**
 - On the right-hand side, under **Required**,
 - Select **Waiver of Corporate Tax Lien** from the dropdown list.
- Complete application and **submit**.

Please note

- If you must apply by paper, select [Request for a Certificate of Good Standing and/or Tax Compliance or Waiver of Corporate Tax Lien](/doc/request-for-a-certificate-of-good-standing-and-or-tax-compliance-or-waiver-of-corporate-tax-lien/download) (/doc/request-for-a-certificate-of-good-standing-and-or-tax-compliance-or-waiver-of-corporate-tax-lien/download).
 - Processing of a paper application can take 4 to 6 weeks. DOR **strongly recommends** filing your request online.
- DOR does not charge a fee to obtain a Corporate Tax Lien Waiver.

Keep in mind:

- Limit Liability Companies can only obtain a Corporate Tax Lien Waiver if they file and pay corporate returns.
- Non-Profit corporations can not obtain a Corporate Tax Lien Waiver.
- Sole Proprietors can not obtain a Corporate Tax Lien Waiver.

Why can't I submit my application?

You can't submit an application if you have:

- Outstanding liability
- Unfiled returns or
- Other issues with your accounts.

You must file and pay Massachusetts taxes and remedy any other situations before filing for a Certificate of Good Standing or Corporate Tax Lien Waiver.

Can I print the Certificate of Good Standing or Corporate Tax Lien Waiver?

An approved Certificate of Good Standing or Corporate Tax Lien Waiver will be mailed.

However, if you need your certificate or waiver sooner, both users and non-users of MassTaxConnect can print within 24-48 hours after approval.

For individuals and businesses registered with MassTaxConnect

- Log in to [MassTaxConnect](https://mtc.dor.state.ma.us/mtc/_/) (https://mtc.dor.state.ma.us/mtc/_/)
- Go to the **Action Center** tab and select the **View Letters** link.

You can filter the list of letters by entering **Certificate of Good Standing** or **Corporate Tax Lien Waiver** in the filter bar.

For individuals and businesses NOT registered with MassTaxConnect

When you apply for a Certificate of Good Standing or Corporate Tax Lien Waiver, you will receive an automated email with a confirmation code and number.

It is important to save this email as you will need this information if you choose to print out your certificate or waiver.

To print:

- Go to MassTaxConnect
- On the homepage under **Quick Links**, select **Find a Submission**
- Enter the email address used on your application
- Enter the 6 digit **confirmation code** which you received by email when you applied.
- **Submit.**

Notice of Non-Renewal of Professional License

Professional licenses are issued by the [Division of Occupational Licensure \(DOL\)](#) ([/division-of-occupational-licensure-dol-disciplinary-actions](#)).

If you owe Massachusetts tax or have not filed state returns, you may not be able to renew your Professional License.

If you received a Notice of Non-Renewal of Professional License, visit [DOR's Professional License Renewal page](#) ([/info-details/massachusetts-professional-license-renewal-faqs](#)).

Contact

Certificate of Good of Standing

Phone

(617) 887-6400 (tel:+16178876400)
9 a.m. – 4 p.m., Monday through Friday

Online

Translate a website, webpage or document

(/info-details/how-to-translate-a-website-webpage-or-document-into-the-language-you-want)

RELATED

MassTaxConnect (https://mtc.dor.state.ma.us/mtc/_/)

Video: How to File for a Certificate of Good Standing When You are Logged

In (https://www.youtube.com/watch?v=apSWETA8r4Q&list=PLfBnwDVE7DgGsk_WprAIk_BVQvxUgUtvk&index=3)

AP 613: Requesting a Certificate of Good Standing and/or Tax Compliance or Waiver of Corporate Tax Lien (/administrative-procedure/ap-613-requesting-a-certificate-of-good-standing-andor-tax-compliance-or-waiver-of-corporate-tax-lien)

Set up a payment agreement (/info-details/dor-payment-agreement-frequently-asked-questions)

Massachusetts Professional License Renewal FAQs (/info-details/massachusetts-professional-license-renewal-faqs)



(/)

All Topics (/topics/massachusetts-topics)

Site Policies (/site-policies)

Public Records Requests (/topics/public-records-requests)

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Commonwealth of Massachusetts
Department of Revenue
Christopher C. Harding, Commissioner

mass.gov/dor

Letter ID: L0 #####
Notice Date: ##-##
Case ID: 0-000- ##-##



SAMPLE

CERTIFICATE OF GOOD STANDING AND/OR TAX COMPLIANCE



Why did I receive this notice?

The Commissioner of Revenue certifies that, as of the date of this certificate, **COMPANY NAME** is in compliance with its tax obligations under Chapter 62C of the Massachusetts General Laws.

This certificate doesn't certify that the taxpayer is compliant in taxes such as unemployment insurance administered by agencies other than the Department of Revenue, or taxes under any other provisions of law.

This is not a waiver of lien issued under Chapter 62C, section 52 of the Massachusetts General Laws.

What if I have questions?

If you have questions, call us at (617) 887-6367 or toll-free in Massachusetts at (800) 392-6089, Monday through Friday, 8:30 a.m. to 4:30 p.m..

Visit us online!

Visit mass.gov/dor to learn more about Massachusetts tax laws and DOR policies and procedures, including your Taxpayer Bill of Rights, and MassTaxConnect for easy access to your account:

- Review or update your account
- Contact us using e-message
- Sign up for e-billing to save paper
- Make payments or set up autopay

Edward W. Coyle, Jr., Chief
Collections Bureau

SAMPLE

**Massachusetts
Department of Revenue**

PO BOX 7073 BOSTON, MA 02204



CHRISTOPHER C. HARDING, COMMISSIONER
CHARLENE HANNAFORD, DEPUTY COMMISSIONER

Collections Bureau, Certificate Unit
Telephone: (617) 887-6400
Date:

**Company
Name**

T/P ID XXX XX XXXX

The Massachusetts Department of Revenue has received a request for a Certificate of Good Standing for the above listed taxpayer. The Massachusetts Department of Revenue currently considers this taxpayer to be in compliance with the tax laws of the Commonwealth of Massachusetts.

A handwritten signature in cursive script, appearing to read "Charlene Hannaford".

Charlene Hannaford
Deputy Commissioner

SAMPLE LETTER 1
FROM CONTRACTOR REGARDING ACCOUNTING CONTROLS
Pursuant to MGL Chapter 30, Section 39R

TO BE SUBMITTED ON CONTRACTOR'S LETTERHEAD

DATE

INSERT Owner name and address

RE: [INSERT CONTRACT #/PROJECT # AND NAME]

Dear [_____]:

This letter is being submitted pursuant to MGL Chapter 30 §39R(c). Please be advised that our firm has a system of internal accounting controls which assure that:

- (1) transactions are executed in accordance with management's general and specific authorization;
- (2) transactions are recorded as necessary, to permit preparation of financial statements in conformity with generally accepted accounting principles, and 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.

Sincerely,

[Name and title of authorized representative of Contractor]

SAMPLE LETTER 2
FROM CPA REGARDING CONTRACTOR ACCOUNTING CONTROLS
Pursuant to MGL Chapter 30, Section 39R

TO BE SUBMITTED ON CPA'S LETTERHEAD

DATE

INSERT Owner name and address

RE: [INSERT CONTRACT #/PROJECT # AND NAME]

Dear [_____]:

Please be advised that we have reviewed the Statement of Internal Accounting Controls prepared by [NAME OF CONTRACTOR], in connection with the above-captioned Project as required under MGL Chapter 30, § 39R. In our opinion, representations of management are consistent with our evaluations of the system of internal accounting controls and such representations are, in addition, reasonable with respect to transactions and assets in amounts which would be material when measured in relation to [NAME OF CONTRACTOR]'s financial statements.

Sincerely,

_____, CPA
[Name]

SECTION 00 31 00

AVAILABLE PROJECT INFORMATION

INFORMATION	LOCATION OF INFORMATION
Easements, Rights-of-Way	Available from Owner
Survey	Shown on Drawings
Geotechnical Data Geotechnical Report Soil Boring Data, Results of Laboratory Testing - Test Pit Locations Shown on Drawings Supplemental Laboratory Testing	Appendix A
Permits MassDEP Bureau of Resource Protection- Wetlands Order of Conditions - MassDEP File #087-0689, issued February 13, 2023 U.S. Army Corps of Engineers General Permit Preconstruction Notification Authorization (Permits pending approval will be provided upon receipt)	Following this page To be provided

END OF SECTION

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Massachusetts Department of Environmental Protection
 Bureau of Resource Protection - Wetlands
WPA Form 5 - Order of Conditions
 Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
 MassDEP File #:087-0689
 eDEP Transaction #:1514040
 City/Town:AGAWAM

A. General Information

1. Conservation Commission AGAWAM
 2. Issuance a. OOC b. Amended OOC
 3. Applicant Details
 a. First Name MARIO b. Last Name MAZZA
 c. Organization TOWN OF AGAWAM DEPARTMENT OF PUBLIC WORKS
 d. Mailing Address 1000 SUFFIELD STREET
 e. City/Town AGAWAM f. State MA g. Zip Code 01001

4. Property Owner

a. First Name b. Last Name
 c. Organization SEE ATTACHED LIST OF PROPERTY OWNERS
 d. Mailing Address
 e. City/Town f. State g. Zip Code

5. Project Location

a. Street Address 0, 534 & 536 NORTH STREET
 b. City/Town AGAWAM c. Zip Code 01001
 d. Assessors F12, F13, F13 e. Parcel/Lot# 4/26, 4/11, 4/10
 Map/Plat#
 f. Latitude 42.07977N g. Longitude 72.66162W

6. Property recorded at the Registry of Deed for:

a. County	b. Certificate	c. Book	d. Page
HAMPDEN		SEE ATTACHED LIST OF PROPERTY OWNERS	SEE ATTACHED LIST OF PROPERTY OWNERS

7. Dates

a. Date NOI Filed : 1/13/2023 b. Date Public Hearing Closed: 1/26/2023 c. Date Of Issuance: 2/13/2023

8. Final Approved Plans and Other Documents

a. Plan Title:	b. Plan Prepared by:	c. Plan Signed/Stamped by:	d. Revised Final Date:	e. Scale:
"TOWN OF AGAWAM, MA NORTH STREET CULVERT REPLACEMENT"	WOODARD & CURRAN	SCOTT MEDEIROS	February 2023	AS NOTED

B. Findings

1 Findings pursuant to the Massachusetts Wetlands Protection Act
 Following the review of the the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is significant to the following interests of the Wetlands Protection Act.

Check all that apply:

a. <input checked="" type="checkbox"/> Public Water Supply	b. <input type="checkbox"/> Land Containing Shellfish	c. <input checked="" type="checkbox"/> Prevention of Pollution
--	---	--

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<input checked="" type="checkbox"/> Private Water Supply	<input checked="" type="checkbox"/> Fisheries	<input checked="" type="checkbox"/> Protection of Wildlife Habitat
<input checked="" type="checkbox"/> Ground Water Supply	<input checked="" type="checkbox"/> Storm Damage Prevention	<input checked="" type="checkbox"/> Flood Control

2. Commission hereby finds the project, as proposed, is:

Approved subject to:

a. The following conditions which are necessary in accordance with the performance standards set forth in the wetlands regulations. This Commission orders that all work shall be performed in accordance with the Notice of Intent referenced above, the following General Conditions, and any other special conditions attached to this Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, these conditions shall control.

Denied because:

b. The proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect interests of the Act, and a final Order of Conditions is issued. **A description of the performance standards which the proposed work cannot meet is attached to this Order.**

c. The information submitted by the applicant is not sufficient to describe the site, the work or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the interests of the Act, and a final Order of Conditions is issued. **A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).**

3. Buffer Zone Impacts: Shortest distance between limit of project disturbance and the wetland resource area specified in 310CMR10.02(1)(a).

a. linear feet

Inland Resource Area Impacts:(For Approvals Only):

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. <input checked="" type="checkbox"/> Bank	<u>687</u> a. linear feet	<u>687</u> b. linear feet	<u>624</u> c. linear feet	<u>624</u> d. linear feet
5. <input checked="" type="checkbox"/> Bordering Vegetated Wetland	<u>238</u> a. square feet	<u>238</u> b. square feet	<u>238</u> c. square feet	<u>238</u> d. square feet
6. <input checked="" type="checkbox"/> Land under Waterbodies and Waterways	<u>3320</u> a. square feet	<u>3320</u> b. square feet	<u>4714</u> c. square feet	<u>4714</u> d. square feet
	<u>0</u> e. c/y dredged	<u>0</u> f. c/y dredged		
7. <input type="checkbox"/> Bordering Land Subject to Flooding	<u> </u> a. square feet	<u> </u> b. square feet	<u> </u> c. square feet	<u> </u> d. square feet
Cubic Feet Flood Storage	<u> </u> e. cubic feet	<u> </u> f. cubic feet	<u> </u> g. cubic feet	<u> </u> h. cubic feet
8. <input type="checkbox"/> Isolated Land Subject to Flooding	<u> </u>	<u> </u>		

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Cubic Feet Flood Storage	a. square feet	b. square feet		
	c. cubic feet	d. cubic feet	e. cubic feet	f. cubic feet
9. <input checked="" type="checkbox"/> Riverfront Area	<u>25901</u>	<u>25901</u>		
Sq ft within 100 ft	a. total sq. feet <u>25901</u>	b. total sq. feet <u>25901</u>	<u>25901</u>	<u>25901</u>
Sq ft between 100-200 ft	c. square feet <u>0</u>	d. square feet <u>0</u>	e. square feet <u>0</u>	f. square feet <u>0</u>
	g. square feet	h. square feet	i. square feet	j. square feet

Coastal Resource Area Impacts:

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
10. <input type="checkbox"/> Designated Port Areas	Indicate size under Land Under the Ocean, below			
11. <input type="checkbox"/> Land Under the Ocean	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
12. <input type="checkbox"/> Barrier Beaches	Indicate size under Coastal Beaches and/or Coastal Dunes below			
13. <input type="checkbox"/> Coastal Beaches	a. square feet	b. square feet	c. c/y nourishment	d. c/y nourishment
14. <input type="checkbox"/> Coastal Dunes	a. square feet	b. square feet	c. c/y nourishment	d. c/y nourishment
15. <input type="checkbox"/> Coastal Banks	a. linear feet	b. linear feet		
16. <input type="checkbox"/> Rocky Intertidal Shores	a. square feet	b. square feet		
17. <input type="checkbox"/> Salt Marshes	a. square feet	b. square feet	c. square feet	d. square feet
18. <input type="checkbox"/> Land Under Salt Ponds	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
19. <input type="checkbox"/> Land Containing Shellfish	a. square feet	b. square feet	c. square feet	d. square feet
20. <input type="checkbox"/> Fish Runs	Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above			
	c. c/y dredged	d. c/y dredged		

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21. Land Subject to Coastal Storm Flowage

a. square feet b. square feet

22.

Restoration/Enhancement (For Approvals Only)

If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.5.c & d or B.17.c & d above, please entered the additional amount here.

a. square feet of BVW

b. square feet of Salt Marsh

23.

Streams Crossing(s)

If the project involves Stream Crossings, please enter the number of new stream crossings/number of replacement stream crossings.

0

1

a. number of new stream crossings

b. number of replacement stream crossings

C. General Conditions Under Massachusetts Wetlands Protection Act

The following conditions are only applicable to Approved projects

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
 - a. the work is a maintenance dredging project as provided for in the Act; or
 - b. the time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order.
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not exceed the issuance date of the original Final Order of Conditions.
7. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.
8. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.
9. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon

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which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work..

10. A sign shall be displayed at the site not less than two square feet or more than three square feet in size bearing the words,

" Massachusetts Department of Environmental Protection"

[or "MassDEP"]

File Number : "087-0689"

11. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before Mass DEP.
12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.
13. The work shall conform to the plans and special conditions referenced in this order.
14. Any change to the plans identified in Condition #13 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.
15. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.
16. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.
17. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.
18. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls if deemed necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.

NOTICE OF STORMWATER CONTROL AND MAINTENANCE REQUIREMENTS

19. The work associated with this Order (the "Project") is (1) is not (2) subject to the Massachusetts Stormwater Standards. If the work is subject to Stormwater Standards, then the project is subject to the following conditions;
- a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollutant Discharge Elimination System Construction General Permit as required by Stormwater Standard 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.
- b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that: *i.* all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period

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- BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures; *ii.* as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized; *iii.* any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10; *iv.* all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition; *v.* any vegetation associated with post-construction BMPs is suitably established to withstand erosion.
- c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 19(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement") for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following: *i.*) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and *ii.*) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.
- d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollutant Discharge Elimination System Multi-Sector General Permit.
- e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 19(f) through 19(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 19(f) through 19(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.
- f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.
- g) The responsible party shall:
1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
 2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission") upon request; and
 3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.
- h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with

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all applicable federal, state, and local laws and regulations.

- i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.
- j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.
- k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.
- l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions:
SEE ATTACHED



TOWN OF AGAWAM, MASSACHUSETTS
CONSERVATION COMMISSION
ORDER OF CONDITIONS

North St Right of Way, 534 & 536 North St, North St Pumping Station | Town of Agawam |
DEP File #087-0689

1. This Order supersedes all previous Orders of Conditions issued for this work.
2. The Order of Conditions applies only to the work permitted by this Order. Any other work to be done within the area of statutory interests of Wetlands Protection shall require the filing of a new Notice of Intent or Request for Determination.
3. During the construction phase, the applicant shall be responsible for maintaining a copy of these Orders at the site. The applicant shall be responsible for compliance with the conditions of these Orders.
4. In advance of any work on this project, the applicant shall contact the Conservation Commission and arrange a conference between the Commission, contractor, designer/engineer, and applicant. The purpose of this conference is to insure that all of the Orders are understood. This conference shall take place at a regularly scheduled Commission meeting.
5. Prior to the start of construction, adequate erosion and sedimentation control measures shall be implemented, and shall be maintained throughout the entire construction phase and until the site has become stabilized with permanent vegetative cover.
6. The Commission shall be notified at least seventy-two hours prior to the start of site work (including tree cutting or clearing).
7. The project engineer/designer shall be held responsible and accountable for the true and accurate implementation and construction of his/her design or plan. Should any accidental deviation from the approved plan occur, the engineer/designer shall notify the Commission immediately to determine if a new Notice of Intent is required. If any changes to the approved plan are anticipated, the engineer/designer shall likewise notify the Commission to determine if a new Notice of Intent is required. In any case the Commission may deny any deviation, accidental or intended, from the approved plan.
8. There shall be no discharge or spillage of oil, fuel, any petroleum product or any other pollutant into any area of statutory interest.

9. All work within the area of statutory interest shall be performed so as to create minimum disturbance to the existing vegetative cover and contours.
10. The construction site shall be left in a stable condition at the close of each day. Erosion and sedimentation controls shall be continuously monitored to ensure proper operation.
11. Whether from on-site or off-site, any fill used in connection with this project shall be clean fill as described here:

The fill material shall be clean coarse washed sand or other clean granular material essentially free of clay, fines, dust, organic matter, large stones, masonry, stumps, frozen clumps of earth, wood tree branches and waste material. Before the fill is put in place, all trees, brush and stumps shall be removed from the area to be filled. Topsoil, peat and other impervious materials shall be removed from all areas to be filled prior to the placement of the fill material.

12. All disturbed areas of statutory interest shall be stabilized with permanent vegetative cover. After proper grading, the area shall be loamed with not less than four (4) inches of good quality loam, seeded with a cover appropriate to the area and fertilized with an organic 10-6-4 or equivalent dry fertilizer at the rate of fifteen pounds per one thousand feet. A mulch of hay, straw or bark of at least two (2) inches in depth shall be placed on newly seeded areas and all slopes capable of eroding into the areas of statutory interest.
13. Periodic maintenance/cleaning of the debris in the stream from the roadway to the driveway culvert on 534 North St shall be conducted by the owner and all successors in interest or control of the property. The applicant, his successors or assigns shall have the continuing responsibility of this maintenance. After the project is completed, the Town must submit to the Conservation Commission a written agreement with the owner of 534 North St. This agreement will be to inspect and/or maintain the stream channel once every **three** months. The upstream part of the channel should be inspected every three months to remove any debris that hinders the flow of the stream. To ensure compliance with this order, please send a notification to the Conservation Commission when these inspections are conducted.
14. Parcels abutting or containing wetland or resource areas shall carry the following restrictions, and a covenant so noted on each deed:

"This lot contains certain areas or abuts areas protected by Chapter 131, Section 40 of the General Laws of Massachusetts known as the Wetlands Protection Act and comes under the jurisdiction of the Agawam Conservation Commission. No cutting of trees, clearing of brush, digging, filling in with soil or debris, or the building of bridges is permitted within one hundred (100) feet of the designated wetland areas or within 200' of any

designated river without specific approval granted by the Conservation Commission."

15. The Commission reserves the right to impose additional conditions on any or all portions of this work to minimize the impact of potential site erosion or noticeable degradation of water quality discharging from the site at any time.
16. This order shall apply to all successor or assignee in interest or control of the subject property. Any conveyance of interest or control in the subject property shall make reference to this order by stating that the conveyance is subject to the provisions of an Order of Conditions under the Wetlands Protection Act, M.G.L. Chapter 131, Section 40, and by giving the book and page reference in the Hampden County Registry of Deeds where this order is recorded.
17. The petitioner shall have recorded in the Hampden County Registry of Deeds an "Order of Conditions Form" provided by this Commission. The Commission will not allow work to begin until proof of recording is provided the Conservation Commission.
18. The dewatering plan shall be submitted to the Commission for review prior to the start of construction.
19. A sequencing plan shall be submitted to the Commission prior to the start of any work.

D. Findings Under Municipal Wetlands Bylaw or Ordinance

1. Is a municipal wetlands bylaw or ordinance applicable? Yes No

2. The Conservation Commission hereby (check one that applies):

a. DENIES the proposed work which cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw specifically:

1. Municipal Ordinance or Bylaw _____ 2. Citation _____

Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order or Conditions is issued. Which are necessary to comply with a municipal ordinance or bylaw:

b. APPROVES the proposed work, subject to the following additional conditions.

1. Municipal Ordinance or Bylaw _____ 2. Citation _____

3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.

The special conditions relating to municipal ordinance or bylaw are as follows:



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Agawam
 City/Town

E. Signatures

This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance.

2/13/23

1. Date of Issuance

Please indicate the number of members who will sign this form. This Order must be signed by a majority of the Conservation Commission.

7

2. Number of Signers

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

Signature S. Ryan Fallon
 Signature Kevin Brown
 Signature Jim Ward
 Signature Sheryl Becker
 Signature Magda Galitsowa
 Signature Paul Magala
 Signature Henry Kozloski
 Signature _____

Printed Name S. RYAN FALLON
 Printed Name Kevin Brown
 Printed Name Jim Ward
 Printed Name Sheryl Becker
 Printed Name Magda Galitsowa
 Printed Name FRANK MEMBERG
 Printed Name Henry Kozloski
 Printed Name _____

by hand delivery on

2/13/23

Date

by certified mail, return receipt requested, on

Date

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E. Signatures

This Order is valid for three years from the date of issuance, unless otherwise specified pursuant to General Condition #4. If this is an Amended Order of Conditions, the Amended Order expires on the same date as the original Order of Conditions.

2/13/2023
1. Date of Original Order

Please indicate the number of members who will sign this form. This Order must be signed by a majority of the Conservation Commission.

7
2. Number of Signers

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

Signatures:	_____	Sheryl Becker	_____
S. Page Fallon	_____	Magda Galiatsos	_____
Keven Brown	_____	Frank Meagher	_____
Jill Ward	_____	Henry Kozloski	_____
<input type="checkbox"/> by hand delivery on	_____	<input type="checkbox"/> by certified mail, return receipt requested, on	_____
Date	_____	Date	_____

F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

G. Recording Information

This Order of Conditions must be recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land subject to the Order. In the case of registered land, this Order shall also be noted on the Land Court Certificate of Title of the owner of the land

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subject to the Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

AGAWAM
Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:
AGAWAM
Conservation Commission

Please be advised that the Order of Conditions for the Project at:

0, 534 & 536 NORTH STREET
Project Location

087-0689
MassDEP File Number

Has been recorded at the Registry of Deeds of:

<u>County</u>	<u>Book</u>	<u>Page</u>
---------------	-------------	-------------

for:
Property Owner

and has been noted in the chain of title of the affected property in:

<u>Book</u>	<u>Page</u>
-------------	-------------

In accordance with the Order of Conditions issued on:

Date

If recorded land, the instrument number identifying this transaction is:

Instrument Number

If registered land, the document number identifying this transaction is:

Document Number

Signature of Applicant

Rev. 4/1/2010

List of Property Owners
 Culvert Replacement Project
 North Street Over White Brook
 Notice of Intent Application

Parcel ID	Property Owner	Street Address	Mailing Address	Registry of Deeds Information	
				County	Book/Page
N/A	Town of Agawam	North Street Right-of Way	36 Main Street Agawam, MA 01001-1825	Hampden	N/A
F12 4 26	Town of Agawam	North Street- Pumping Station	36 Main Street Agawam, MA 01001-1825	Hampden	N/A
F13 4 11	Daniel & Cheryl Donatini	534 North Street	534 North Street Feeding Hills, MA 01030	Hampden	5714/426
F13 4 10	Sarah Catherine Hoisington	536 North Street	536 North Street Feeding Hills, MA 01030	Hampden	20878/373

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:

**Town of Agawam
Department of Public Works
1000 Suffield Street
Agawam, MA 01001
Attention: Jennifer Bonfiglio, Chief Procurement Officer**

- 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 of 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. Contract Times as set forth in the Agreement; and
 - E. provisions for liquidated damages as set forth in the Agreement.
- 3.02 This Bid will remain subject to acceptance for 90 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.

<u>Addendum No.</u>	<u>Addendum Date</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

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 in accordance with the Contract Documents for the following price(s). The method for determining award is as set forth in Section 00 21 13. **Bidder must complete all items.**

BID PRICES SHALL EXCLUDE SALES AND USE TAX.

LUMP SUM BID PRICE

_____ Dollars and _____ Cents \$ _____

(Use words) *(Use figures)*

4.02 Contract Price Adjustments

A. Owner’s Contingency Allowance (per Paragraph 11.02 of the General Conditions)

1. For Materials Escalation Price Adjustment (statutory requirement) per MGL c30s38A: Twenty-Five Thousand Dollars (\$25,000). Adjustments are established in Section 00 73 73, SC-12.01.

ARTICLE 5 – TIME OF COMPLETION

- 5.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions and Supplementary Conditions, if any, on or before the dates or within the number of calendar days indicated in the Agreement.
- 5.01 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 6 – ATTACHMENTS TO THIS BID

- 6.01 The following documents are fully completed, submitted with and made a part of and a condition of this Bid.
 - 00 43 13 Bid Bond
 - OR*
 - Required Bid security in the form of _____

Supplements

- 00 45 05 Bidder's Representations and Certifications **including required documents and submittals specified**
- 00 45 13 Bidder's Qualifications
- 00 45 19 Non-collusion Affidavit

ARTICLE 7 – COMMUNICATIONS WITH BIDDER

7.01 Communications concerning this Bid shall be addressed to:

Name _____

Title _____

Business Address _____

Telephone No. _____

Facsimile No. _____

Email address _____

ARTICLE 8 – BID SUBMITTAL

SUBMITTED ON:
EIN/FEIN:

8.01 This Bid is submitted by:

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: _____
(Signature of Corporate Secretary)

Business Address: _____

Phone & Facsimile Nos: _____

Email address: _____

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

A 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: _____

A 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.)

A Partnership

Partnership Name: _____ (SEAL)

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

Name (typed or printed): _____

Business Address: _____

Phone & Facsimile Nos: _____

Email address: _____

0234052.00
Issue Date: June 2023

North Street Culvert Replacement
Town of Agawam, MA

An Individual

Name (*typed or printed*): _____

By: _____
(Individual's signature)

Doing business as: _____

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 (Seal)

Surety's Name and Corporate Seal (Seal)

By: _____
Signature

By: _____
Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

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 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 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 Contract Documents, and if Bidder is awarded a Contract, agrees to incorporate applicable provisions into all subcontracts and Purchase Orders so that such provisions will be binding upon each Subcontractor or Supplier, including as a minimum, Statutory Requirements, safety and health regulations; and Wage Rate Requirements.

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 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 Bidder and Owner, employee or official both have notified public authorities in writing, that the Bidder 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.
- C. 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 Intent to Award.
- D. 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 Intent to Award.
- E. 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; and
 - To DCAMM - An audited financial statement for the most recent completed fiscal year.

- F. 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 6B and any sheet metal Work will be performed by a contractor licensed in accordance with 271 CMR 1.00, et seq. governing licensing, permitting, and sheet metal work in Massachusetts.
- G. 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.
- H. 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.
- I. Bidder understands the Bid 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 Bidder agrees to provide the Owner copies of any documents requested under this law at no charge to the Owner or the requestor.
- J. Bidder will comply with the State and Federal COVID-19 guidelines and procedures for the construction sector (as may be amended).

1.04 BIDDER'S CERTIFICATIONS REQUIRED BY FEDERAL LAW AMERICAN RESCUE PLAN ACT (ARPA)

- A. Bidder will comply with requirements for use of *minority businesses, women's business enterprises, and labor surplus* per 2 CFR Part 200 Subpart D §200.321 and will take affirmative steps to assure firms are used when possible.
- B. Bidder will provide *preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States* (including but not limited to iron, aluminum, steel, cement, and other manufactured products) per 2 CFR Part 200 Subpart D §200.322 and will comply with 2 CFR Part 200 Subpart D §200.323, *Procurement of recovered materials*, as applicable, which covers compliance with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act.

- C. Bidder will provide *access to records* by Federal government representatives per 2 CFR Part 200 Subpart D §200.337.
- D. Bidder will comply with requirements for *prohibition on certain telecommunications and video surveillance services or equipment* per 2 CFR Part 200 Subpart D §200.216.
- E. Bidder will comply with the requirements for *equal employment opportunity* per 41 CFR 60 and in accordance with Executive Order 11246 and has submitted the attached “Certificate of Non-Segregated Facilities” with its Bid.
- F. Bidder will comply with the requirements of the *Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708)*, the *Davis-Bacon Act*, *Federal minimum wage rates and Copeland Anti-KickBack Act (40 USC 3145)*.
- G. Bidder will comply with the *Clean Air Act (42 U.S.C. 7401-7671q.)* and the *Federal Water Pollution Control Act (33 U.S.C. 1251-1387)*, as amended
- H. Bidder is not presently debarred, suspended, proposed for disbarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency or from receiving a contract with Federal financial assistance (see <https://www.dol.gov/agencies/ofccp/debarred-list>) and certifies it does not appear on the System for Award Management (SAM) at as a debarred entity (<https://sam.gov/content/home>).
- I. Bidder has disclosed its lobbying activities and submitted the attached “Certification for Contracts, Grants, and Loans” (no lobbying) OR “Standard Form LLL Disclosure of Lobbying Activities” (if applicable) with its Bid.

ATTACHMENTS

- A. Certificate of Non-Segregated Facilities
- B. Certification for Contracts, Grants, and Loans (no lobbying) OR
- C. Standard Form LLL Disclosure of Lobbying Activities (if applicable)

SUBMITTED ON:
By:
<i>Authorized person per Bid Form</i>

END OF SECTION

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CERTIFICATE OF NON-SEGREGATED FACILITIES

We, _____ (Company) certify that we do not and will not maintain or provide for our employees any segregated facilities at any of our establishments, and that we do not and will not permit our employees to perform their services at any location, under our control, where segregated facilities are maintained. We understand and agree that breach of this certification is a violation of Equal Opportunity clause required by Executive Order 11246, amended.

As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom or otherwise.

We further agree that (except where we have obtained identical certifications from proposed Subcontractors for specific time periods) we will obtain identical certifications from proposed Subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity clause; that we will retain such certification in our files; and that we will forward the following notice to such proposed Subcontractors (except where the proposed Subcontractors have submitted identical certifications for specific time periods).

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENT FOR CERTIFICATION OF NON-SEGREGATED FACILITIES. A certification of Non-segregated facilities as required by the 9 May 1967 order on Elimination of Segregated Facilities, by the Secretary of Labor (32 Fed. Reg. 7439, 19 May 1967), must be submitted from the provisions either for each subcontract or for all subcontracts during a period (i.e. quarterly, semi-annually, or annually).

NOTE: Whoever knowingly and willfully makes any false, fictitious or fraudulent representation may be liable to criminal prosecution under 18 U.S.C. 1001.

(Name of Company)

By: _____

Date: _____

Title: _____

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CERTIFICATION FOR CONTRACTS, GRANTS AND LOANS

The undersigned certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant or Federal loan, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant or loan.

2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant or loan, the undersigned shall complete and submit Standard Form - LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.

3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including contracts, subcontracts, and subgrants under grants and loans) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

(name)

(date)

(title)

oOo

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See Reverse for public burden disclosure.)

1. Type of Federal Action: <input type="checkbox"/> a. contract <input type="checkbox"/> b. grant <input type="checkbox"/> c. cooperative agreement <input type="checkbox"/> d. loan <input type="checkbox"/> e. loan guarantee <input type="checkbox"/> f. loan insurance	2. Status of Federal Action: <input type="checkbox"/> a. bid/offer/application <input type="checkbox"/> b. initial award <input type="checkbox"/> c. post-award	3. Report Type: <input type="checkbox"/> a. initial filing <input type="checkbox"/> b. material change For Material Change Only: year _____ quarter _____ date of last report _____
4. Name and Address of Reporting Entity: <input type="checkbox"/> Prime <input type="checkbox"/> Subawardee Tier _____, if known: Congressional District, if known:	5. If Reporting Entity in No. 4 is a Subawardee, Enter Name and Address of Prime: Congressional District, if known:	
6. Federal Department/Agency:	7. Federal Program Name/Description: CFDA Number, if applicable:	
8. Federal Action Number, if known:	9. Award Amount, if known: \$	
10. a. Name and Address of Lobbying Registrant <i>(If individual, last name, first name, MI):</i>	b. Individuals Performing Services <i>(Including address if different from No. 10a)</i> <i>(last name, first name, MI):</i>	
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less that \$10,000 and not more than \$100,000 for each such failure.	Signature: _____ Print Name: _____ Title: _____ Telephone No.: _____ Date: _____	
Federal Use Only:	Authorized for Local Reproduction Standard Form LLL (Rev. 7-97)	

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.
2. Identify the status of the covered Federal action.
3. Identify the appropriate classification of this report. If this a followup report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred, Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.
4. Enter the full name, address, city, State and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be a prime or subaward receipt. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.
5. If the organization filing the report in item 4 checks "Subawardee," then enter the full name, address, city, State and zip code of the prime Federal recipient. Include Congressional District, if known.
6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.
7. Enter the Federal program name or description for the covered Federal action (Item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans and loan commitments.
8. Enter the most appropriate Federal identifying number available for the Federal action identified in Item 1 (e.g., Request for Proposal (RFP) number; Invitation for bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Include prefixes, e.g. "RFP-DE-90-001."
9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in Item 4 or 5.
10. (a) Enter the full name, address, city, State and zip code of the lobbying registrant under the Lobbying Disclosure Act of 1995 engaged by the reporting entity identified in Item 4 to influence the covered Federal action.

(b) Enter the full names of the individual(s) performing services, and include full address if different from 10 (a). Enter Last Name, First Name and Middle Initial (MI).
11. Certifying official shall sign and date the form, print his/her name, title and telephone number.

According to the Paperwork Reduction Act, as amended, no persons are required to respond to a collection of information unless it displays a valid OMB Control Number. The valid OMB control number for this information collection is OMB No. 0348-0046. Public reporting burden for this collection of information is estimated to average 10 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, DC 20503.

SECTION 00 45 13

BIDDER'S QUALIFICATIONS

The following data, statements of experience, personnel, equipment and general qualifications are submitted as a part of the Bid and the Bidder represents and guarantees the truthfulness and accuracy thereof and **its ability to meet the qualifications requirements specified in Section 01 43 05 and the Specifications**. Attach additional sheets as necessary properly cross referenced.

1.01 GENERAL

- A. Bidder's organization is a _____
(entity type) and has been in business continuously from the year _____.
- B. Bidder has operated under the same business name and organization structure for the last 5 years on at least 5 projects yes no
- C. If no, indicate other business names: _____
- D. Bidder's organization has had experience in construction comparable to that required by the Contract Documents as a prime contractor for _____ years and as a subcontractor for _____ years.

1.02 BIDDER EXPERIENCE

A. Identify at least 5 projects completed within the past 5 years **which are similar in type, character, physical size, and complexity to that required by the Contract Documents.**

Client/Owner Name/Address	Project Name/Location	CURRENT Contact Name, Phone, Email	Contract Value	Time Period

1.03 CURRENT LICENSES

B. Indicate Bidder and Subcontractor(s) current licenses including design professionals and surveyors.

Name	State	Type	License number

1.04 PERSONNEL

- A. Identify supervisory personnel that are currently employed by the Bidder and available for assignment to the Project (project manager, superintendents, principal foremen and engineers).
 - 1. Identify full-time on-Site superintendent in responsible charge of the Work with at least 10 years' experience as superintendent on comparable projects.
 - 2. Identify project manager assigned full-time with at least 10 years' experience as project manager on comparable projects.

Name	Title	Years of Experience
	Full time, on-Site Superintendent	
	Full time Project Manager assigned	

- B. Attach detailed resumes of qualifications, previous employers and experience for each supervisory staff listed above.

1.05 PROPOSED DESIGN PROFESSIONALS AND SURVEYORS

A. The following design professionals and surveyors are to be employed or retained by the Bidder and available for assignment to the Project.

Name	Address	Area of Responsibility	Years of Experience

B. Attach detailed resumes of qualifications, previous employers and experience for each design professional and surveyor listed above.

1.07 EQUIPMENT

A. Identify equipment available for use on the Project. Indicate whether owned by Bidder's organization or rented. Attach additional sheets as necessary.

Type of Equipment	Size or Capacity	Owned or Rented

1.08 BUSINESS INTERESTS

A. Identify the names and addresses of the members of the Board of Directors of corporation, or the names and addresses of all persons and parties interested in this Bid as partners of a partnership or as individuals. Attach additional sheets as necessary.

Name	Address	Telephone No.

B. Identify the bank or banks representing the financial responsibility of the Bidder.

Name of Bank	Address	Contact Name and Telephone No.

1.09 VIOLATIONS

- A. Following is a list of violations Bidder and its main Subcontractors have received or been the subject of, or otherwise been involved in, regarding any state or local ethic laws, regulation, code, ordinance, policy, or standard, or offenses arising out of submission of bids or the performance of work on public works projects or contracts over the last 5 years. Attach additional sheets as necessary.

Name and Location of the Project	
Nature of the Violation/Offense	
Duration and dates during which the violation/offense took place	
Name and Location of the Project	
Nature of the Violation/Offense	
Duration and dates during which the violation/offense took place	
Name and Location of the Project	
Nature of the Violation/Offense	
Duration and dates during which the violation/offense took place	

END OF SECTION

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SECTION 00 45 19

NON-COLLUSION AFFIDAVIT

_____, 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

Date: _____

Attest: _____

Date: _____

END OF SECTION

SAMPLE NOTICE OF INTENT TO AWARD (C-00 50 55)

TO BE COMPLETED & ISSUED AFTER BID REVIEW ON OWNER LETTERHEAD

Date

*[Bidder Contact
Bidder Company
Bidder Address]*

**SUBJECT: NOTICE OF INTENT TO AWARD
[PROJECT TITLE/OWNER]**

You are notified that your Bid dated _____ for the above Contract has been considered.

You are the apparent Successful Bidder and the Owner intends that the above Contract be awarded to you. The Total Contract Price of the awarded Contract will be \$_____ [Lump Sum OR based on Unit Prices], subject to the following conditions being met and subject to required reviews and approvals [OPTIONAL and specifically, funding agency approval by [_____].]

You must comply with the following conditions precedent **within 15 days** of the date of receipt of this Notice of Intent to Award:

1. Deliver the Contract security (Bonds) and insurance documentation as specified in the General Conditions and Supplementary Conditions (Articles 2 and 5).
2. Provide a letter from your insurance company or agent confirming types and limits of coverage as required in Paragraph 5.03 of the General Conditions.
3. Deliver the following completed and executed certifications and documents:
 - a.
 - b.
 - c. Items to be provided by Subcontractors:
 -

SAMPLE NOTICE OF INTENT TO AWARD (C-00 50 55)

4. Other conditions precedent:

- *LIST OTHERS IF ANY*

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Intent to 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 a Notice of Award and the conformed Contract Documents with the Agreement for execution.

INSERT OWNER NAME (Owner)

By: _____
[Name and Title]

Copy to Engineer

SAMPLE NOTICE OF AWARD (C-00 51 00)

TO BE COMPLETED & ISSUED WITH CONFORMED AGREEMENT & CONTRACT ON OWNER LETTERHEAD

Date

*[Bidder Contact
Bidder Company
Bidder Address]*

**SUBJECT: NOTICE OF AWARD
[PROJECT TITLE/OWNER]**

You are notified that your Bid dated [insert date] for the above Contract has been considered, and that you are the Successful Bidder and are awarded a Contract for [insert description].

The Total Contract Price of the awarded Contract is \$_____ [Lump Sum OR based on Unit Prices].

_____ unexecuted counterparts of the Agreement and 1 copy of the Contract Documents [(except for Drawings)] accompanies this Notice of Award. [OR have been transmitted or made available electronically.] [Sets Drawings will be delivered separately from the other Contract Documents.]

You must comply with the following conditions precedent.

- Return all executed counterparts of the Agreement to Owner **within 10 days** of receipt of this Notice of Award.
- [Add others as necessary]

After obtaining required reviews and approvals for Contract execution, Owner shall deliver one fully executed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions and Supplementary Conditions, if any.

INSERT OWNER NAME (Owner)

By: _____
[Name and title]

Copy to Engineer

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SECTION 00 52 10

AGREEMENT FORM

THIS AGREEMENT is by and between Town of Agawam, MA (“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 Work is generally described as replacement of an existing culvert conveying flow from White Brook beneath North Street (a MassDOT classified urban minor arterial roadway), construction of an additional culvert beneath an adjacent private driveway, installation of stormwater structures and piping, and the rehabilitation of the existing roadway and surface conditions adjacent to the crossing culverts; and all materials and equipment, construction, and services inherent to the Work.
- 1.02 The Work includes the principal features specified in Section 01 11 00 – Summary of Work.

ARTICLE 2 – THE PROJECT

- 2.01 The Project under the Contract Documents is generally known as “North Street Culvert Replacement Project”.

ARTICLE 3 – ENGINEER

- 3.01 The Project has been designed by Woodard & Curran, Inc. (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, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.
- 4.02 *Substantial Completion and Final Payment*
 - A. The Work shall be substantially complete within 60 calendar days from the commencement of Contract Times as provided in Paragraph 2.03 of the Standard General and Supplementary Conditions and completed and ready for final payment, in accordance with Paragraph 14.07 of the Standard General Conditions, 90 calendar days from the commencement of Contract Times.

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 Conditions and 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 **\$1,000** for each day that expires after the time specified in Paragraph 4.02 above for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by Owner, Contractor shall pay Owner **\$1,000** for each day that expires after the time specified in Paragraph 4.02 above for completion and readiness for final payment until the Work is completed and ready for final payment.

ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds as follows:

LUMP SUM PRICE

[IN WORDS] Dollars and [in Words] Cents

[\$[DOLLAR AMOUNT]]

5.02 *Adjustments to the Contract Price*

A. Adjustments to the Contract Price for Owner’s Contingency Allowances will be made in accordance with the General Conditions, Paragraph 11.02.C.

- 1. For Materials Escalation Price Adjustment (statutory requirement) per MGL c30s38A: Twenty-Five Thousand Dollars (\$25,000). Adjustments are established in Section 00 73 73, SC-12.01.

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 each month 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 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.
 - C. 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.
 - D. 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.

- E. 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.
 - F. Contractor is not presently debarred from entering into 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.
 - G. 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.
 - H. 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.
- 8.03 Contractor agrees to comply with applicable Federal requirements set forth in the Supplementary Conditions Section 00 73 74 including the following.
- A. Minority businesses, women's business enterprises, and labor surplus per 2 CFR Part 200 Subpart D §200.321.
 - B. Domestic preference for procurement per 2 CFR Part 200 Subpart D §200.322.
 - C. Procurement of recovered materials per 2 CFR Part 200 Subpart D §200.323
 - D. Access to records per 2 CFR Part 200 Subpart D §200.337.
 - E. Prohibition on certain telecommunications and video surveillance services or equipment 2 CFR Part 200 Subpart D §200.216
 - F. Per Appendix II to Part 200 - Contract Provisions for Non-Federal Entity Contracts Under Federal Awards
 - 1. Equal Employment Opportunity requirements per 41 CFR 60 and in accordance with Executive Order 11246, "Equal Employment Opportunity"
 - 2. Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708)

3. Davis-Bacon Act, Federal minimum wage rates and Copeland Anti-KickBack Act (40 USC 3145). In case of discrepancy between Federal and state wage rates, the higher wage rates shall apply. See Section 00 73 43.
 4. Clean Air Act (42 U.S.C. 7401-7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as amended
 5. Debarment and Suspension (Executive Orders 12549 and 12689)
 6. Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)
- G. Contractor agrees to incorporate these requirements into all subcontracts regardless of tier and Purchase Orders so that such provisions will be binding upon each Subcontractor or Supplier. The Contractor shall maintain reasonable records to demonstrate compliance with these requirements.
- 8.03 The representations and certifications Contractor submitted with its Bid shall remain valid during the period of this Agreement.
- 8.04 Contractor agrees to 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 – CONTRACT DOCUMENTS

9.01 *Contents*

A. The Contract Documents consist of the following:

1. This Agreement and attachments

COMPLETE LISTING AFTER AWARD

- Bid Form (submitted by XXXX and dated XXX)
 - Bid Supplements and attachments
 - Performance Bond
 - Payment Bond
 - Insurance certificates
2. Forms listed in 00 60 00
 3. Standard General Conditions in Section 00 72 05
 4. Supplementary Conditions as listed in Section 00 01 10, Table of Contents
 5. General Requirements and Specifications as listed in Section 00 01 10, Table of Contents

6. Drawings as listed in Section 00 01 15, List of Drawing Sheets
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.

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

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.

10.05 *Contract is Public Record*

- A. 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.

SIGNATURES APPEAR ON THE FOLLOWING PAGE

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:
Town of Agawam, MA

CONTRACTOR:
NAME (Click or tap here to enter text.)

By: _____
William P. Sapelli, Mayor

By: _____

Printed Name

Title

By: _____
Mario Mazza, DPW Superintendent

License No. _____

Attest: _____
Jennifer Bonfiglio, Chief Procurement Officer

Attest: _____

Title

Address for giving notices:
36 Main Street
Agawam, MA 01001

Address for giving notices:

Agent for service of process:

(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)

(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Approved as to Form by Owner's Counsel:

By: _____

Printed Name _____

Date _____

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

By: _____

Printed Name (Owner's Auditor/Accountant)

Dept. or Business Name

Date: _____

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

(seal)

Contractor's Name and Corporate Seal

(seal)

Surety's Name and Corporate Seal

By: _____

Signature

By: _____

Signature *(attach power of attorney)*

Print Name

Print Name

Title

Title

Attest: _____

Signature

Attest: _____

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

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.

16. Modifications to this Bond are as follows:

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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: _____
Signature

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

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
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.

18. Modifications to this Bond are as follows:

This page intentionally left blank

SAMPLE NOTICE TO PROCEED (C-00 55 00)

TO BE COMPLETED ON OWNER LETTERHEAD

Date

*[Bidder Contact
Bidder Company
Bidder Address]*

**SUBJECT: NOTICE TO PROCEED
[PROJECT TITLE/OWNER]**

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.

[OR for the following portion(s) of the Work:
[Describe the limits of the Work covered if option above chosen]

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

In accordance with Article 4 of the Agreement, the number of days to achieve Substantial Completion is _____, and the number of days to achieve readiness for final payment is _____

OR [*the date of Substantial Completion is _____, and the date of 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 must have delivered to Owner (with copies to Engineer and other identified additional insureds and loss payees) certificates of insurance which you are required to purchase and maintain in accordance with the Contract Documents.

Also, before you may start any Work at the Site, you must:

- Comply with Articles 2.05 and 2.06 of the General and Supplementary Conditions (if any)
- *[*add other requirements*]*

INSERT OWNER NAME (Owner)

By: _____
[Name and title]

Copy to Engineer

This page intentionally left blank

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.

Submittal Transmittal (Form C-00 62 11)
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)

END OF SECTION

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SUBMITTAL TRANSMITTAL (Form C-00 62 11)

Owner:	Transmittal No.:	
Project:	Date:	
Contract No.:		
Contract Title:		
Specification Section No.:		

Assign a consecutive, unique number to each submittal and use same on resubmittals. For "Revision", A =original submittal; B = 1st resubmittal; C (and beyond) = additional resubmittals

Submittal (Item) No.	Revision (A B C etc.)	Date	Title/Description	Vendor/Manufacturer	Copies

- The material and equipment, and requirements for construction/installation contained in Submittal No.(s) _____ have been reviewed and we certify that they are correct and in strict conformance with the requirements specified (no exceptions or deviations)
- The material and equipment and requirements for construction/installation contained in Submittal No.(s) _____ have been reviewed and we certify that they are correct and in strict conformance with the requirements specified except for the following deviations (list below or attach listing): _____

CONTRACTOR'S NAME _____

ADDRESS _____

BY: _____ DATE: _____

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Progress Estimate - Unit Price Work

FORM C-00 62 76

Contractor's Application

For (Contract):		Application Number:										
Application Period:		Application Date:										
A		B		C		D		E		F		
Bid Item No.	Item Description	Bid Item Quantity	Unit Price	Bid Item Value (\$)	Estimated Quantity Installed To Date <i>(Include This Month)</i>	B(2) Estimated Quantity Installed This Month	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)
	mobilize											
Totals												

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

RFI #: _____ Attachment

To: _____

From: _____

Attn: _____

Issue Date: _____

Project: _____

Required Reply Date: _____

DISTRIBUTION:

<u>Contractor</u>	<u>Owner</u>	<u>Engineer</u>
<input type="checkbox"/> _____	<input type="checkbox"/> _____	<input type="checkbox"/> _____
<input type="checkbox"/> _____	<input type="checkbox"/> _____	<input type="checkbox"/> _____
<input type="checkbox"/> _____	<input type="checkbox"/> _____	<input type="checkbox"/> _____

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: (response may be transmitted in separate document)

Possible Cost Effect Yes: No:

Possible Schedule Effect Yes: No:

From: _____ Reply Date: _____ xc: _____

Initial: _____

This page intentionally left blank

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:

This page intentionally left blank

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 in the Contract Documents and to determine and verify the information contained therein.

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

This page intentionally left blank

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:

\$ _____

[Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____:

\$ _____

Contract Price prior to this Change Order:

\$ _____

[Increase] [Decrease] of this Change Order:

\$ _____

Contract Price incorporating this Change Order:

\$ _____

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. _____:

Substantial completion (days): _____

Ready for final payment (days): _____

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:

Substantial completion (days or date): _____

Ready for final payment (days or date): _____

Contract Times with all approved Change Orders:

Substantial completion (days or date): _____

Ready for final payment (days or date): _____

RECOMMENDED:

By: _____
 Engineer (Authorized Signature)

Date: _____

Approved by Funding Agency (if applicable):

Date: _____

ACCEPTED:

By: _____
 Owner (Authorized Signature)

Date: _____

Approved by Funding Agency (if applicable):

Date: _____

ACCEPTED:

By: _____
 Contractor (Authorized Signature)

Date: _____

Approved by Funding Agency (if applicable):

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 above or attached. 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.

Executed by Engineer	Date
----------------------	------

Accepted by Contractor	Date
------------------------	------

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 page intentionally left blank

See various sections of the Supplementary Conditions for additional modifications and supplements

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.

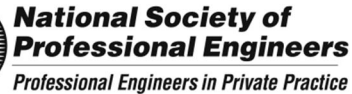
SECTION 00 72 05 STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly by



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Endorsed by



CONSTRUCTION SPECIFICATIONS INSTITUTE

**REVISIONS HIGHLIGHTED WITHIN THE TEXT OF THIS SECTION
HAVE BEEN PREPARED BY WOODARD & CURRAN**

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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SECTION 00 72 05
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. May also be referred to as “Proposal” which may be used interchangeably and shall have the same meaning.
 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, Supplementary 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.

See various sections of the Supplementary Conditions for additional modifications and supplements

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 and complement the Specifications. Shop Drawings and other Contractor submittals are not Drawings as so defined. May also be referred to as "Plans", which may be used interchangeably and shall have the same meaning. Notes on Drawings are directed to Contractor unless specifically noted otherwise.
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 01 of the Specifications which govern the Work in all sections 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.

See various sections of the Supplementary Conditions for additional modifications and supplements

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. May also be referred to as “Construction Schedule”, which may be used interchangeably and shall have the same meaning.
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.

See various sections of the Supplementary Conditions for additional modifications and supplements

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. The Specifications are based on the guidelines of the Construction Specifications Institute (CSI) Project Resource Manual, and are directed to Contractor unless specifically noted otherwise. The words "shall be" are included by inference where a colon (:) is used within sentences or phrases in the Specifications.
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.

See various sections of the Supplementary Conditions for additional modifications and supplements

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.

B. Additional Terms

1. *Final Completion*—The time at which all Work is completed and ready for final payment in accordance with Paragraph 14.07 of these General Conditions.
2. *Industry Practice*—The written practices, methods, materials, supplies and equipment, as changed from time to time, that are commonly used in the industry applicable to the Project to design, construct and operate facilities and plants, or any practices, methods and acts, which in the exercise of reasonable judgment in light of the facts known at the time, could have been expected to accomplish the desired results consistent with good business practices, reliability, safety and expedition.
3. *Installer*—The entity engaged by Contractor or a Subcontractor for installation, erection, application and similar required operations of a particular portion of the Work at the Site, including who has specialty experience in the Work they are engaged to perform.
4. *Punch List*—A list of open items representing portions of the Work which Contractor, Engineer, Owner reasonably agree is not complete on the date of Substantial Completion but which items will not significantly interfere with the safe, reliable operation and integrity of the Project or its intended use.
- 52-5. *Purchase Order*—A written agreement between Contractor and a Supplier for provision of material and equipment.

See various sections of the Supplementary Conditions for additional modifications and supplements

6. Warranty Period—The correction period after the date of Substantial Completion per Paragraph 13.07 of these General Conditions.

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. See also Paragraph 17.02 of these General Conditions.
- 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, test, or approval referred to in the Contract Documents; or
 - 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.

See various sections of the Supplementary Conditions for additional modifications and supplements

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~~Prior to execution of the Agreement ~~to Owner~~, Contractor shall ~~also~~ deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Insurance:* Prior to execution of the Agreement and b~~B~~efore 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~~2 printed or hard copies of the Contract Documents and 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~~90th day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, unless mutually agreed otherwise, 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 and the lead times for equipment and materials per the listing in subparagraph 2.05.A.4;
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 which will be confirmed in writing by Contractor at the time of submission. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work; and-
4. a complete listing of equipment and materials with lead times between placing orders and delivery, including normal allowances of time for processing and correcting Shop Drawings.

- B. *Evidence of Insurance:* In accordance with Paragraph 2.01.

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.
 4. Contractor's listing of equipment and materials with lead times must be reflected in the Progress Schedule. All orders for long lead items shall be placed within 30 days after Effective Date of the Agreement if delivery is critical to scheduling. Failure to place orders in accordance with the Progress Schedule may result in full liability for liquidated damages if Milestones and Contract Times are not met.

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 and comprise the entire agreement between Owner and Contractor concerning the Work. If any term or provision of any of the Contract Documents, or the application thereof to any party or circumstance shall, to any extent, be determined to be invalid or unenforceable, the remaining provisions of the Contract Documents, or the application of such term or provision to parties or circumstances other than those as to which it is held invalid or unenforceable, shall not be affected thereby, and each term and provision of each of the Contract Documents shall be valid and shall be enforced to the fullest extent permitted by Laws and Regulations.
- 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 such conflict, error, ambiguity, or discrepancy in the Contract Documents unless if Contractor had actual knowledge or reasonably should have known of such conflict, error, ambiguity, or discrepancy 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, t~~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 transmitted in in portable document format (PDF), and other electronic media formats of text, data, graphics or other file types supported by any digital document exchange system implemented for the Project, all of which are understood by all parties to constitute official Project correspondence and submittals. ~~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;

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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. ~~(Not Used) 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~~may 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, or
 - e-d. written notice is submitted after final payment.
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.

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3. Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, shall not be liable to Contractor for any Claims for losses or damages incurred by Contractor related to Underground Facilities not shown or indicated (including but not limited to all fees and changes of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs).

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 unless Contractor caused or contributed to such Hazardous Environmental Condition. 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~~5 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 a letter from Contractor's insurance company(s) and agents confirming types and limits of coverage (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, complies with the requirements of Article 5, 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

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- 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-;
 7. claims arising out of violation of Laws or Regulations; and
 8. claims for damages because of negligent acts, errors and omissions arising out of performing or providing professional services.
- 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.~~68~~ 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-included~~ 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 herein and 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) and will contain waiver provisions in accordance with Paragraph 5.07;
 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.

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- 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.
7. In the event general liability insurance is provided on a claims-made policy, the retroactive date of such policy shall not be later than the date of the Notice to Proceed or the Effective Date of the Agreement, whichever is earlier. For construction periods extending beyond the expiration date of an initial claims-made policy, the retroactive date of all subsequent claims-made policies shall not be later than the date of the Notice to Proceed.

C. The limits of liability for the insurance required by Paragraph 5.04 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers' Compensation and related coverage:

<u>Minimum limit of liability</u>	<u>Statutory</u>
<u>Applicable Federal (e.g., Longshoreman's)</u>	<u>Statutory</u>
<u>Employer's Liability</u>	<u>\$1,000,000</u>

2. Contractor's General Liability:

\$1,000,000 per occurrence; \$2,000,000 general 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 Deleted
- Damage to Rented Premises
- Medical Expenses

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

Excess or Umbrella Liability: \$5,000,000 per occurrence; \$5,000,000 general aggregate

3. Automobile Liability under Paragraph 5.04.A.6 of the General Conditions:

Combined Single Limit of \$1,000,000 for bodily injury & property damage covering Contractor and any vehicles owned, hired and non-owned by the Contractor

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4. 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

5. Owners Protective Liability: as may be specified in the Supplementary Conditions

D. 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.

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 (ongoing and completed) under the Contract Documents.

5.06 *Property Insurance*

- A. ~~Unless otherwise provided in the Supplementary Conditions,~~ Owner may, in its discretion, purchase and maintain property insurance upon the Work at the Site. Contractor shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof. Contractor shall be responsible for any (subject to such deductible amounts or self-insured retention 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" or Special Forms 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 special form perils or causes of loss, including but not limited to: fire, lightning, flood, pollution, 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);

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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; and

7.8. comply with the requirements of Paragraph 5.06.C of the General Conditions.

- B. ~~(Not used) 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

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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* (Not used)

- ~~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~~

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~~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 Contractor in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the ~~objecting party Owner~~ shall so notify the other party Contractor 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 Owner,~~ such additional information in respect of insurance provided as ~~the other may be~~ reasonably requested. If either party Contractor does not purchase or maintain all of the bonds and insurance required ~~of such party~~ by the Contract Documents, such party Contractor shall notify the other party Owner 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 Owner may elect to obtain equivalent bonds or insurance to protect ~~such other party's Owner's~~ interests at the expense of the party Contractor 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, startup, 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.

D. Provision of any instructions:

- 1. will not be effective to assign to Owner, or any of Owner's consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 8.09; and
- 2. will not be effective to assign to Engineer, or any of Engineer's consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09.

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.

See various sections of the Supplementary Conditions for additional modifications and supplements

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, make or catalogue number, 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.
- 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.

6.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.
- B. If the Bidding Requirements or 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 the Contractor has submitted a list thereof in accordance with the Bidding Requirements or Supplementary Conditions (which shall be included as an attachment to the Agreement), 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.
1. 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

See various sections of the Supplementary Conditions for additional modifications and supplements

such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

2. Such agreement between Contractor and the Subcontractor or Supplier shall specifically include dispute resolution provisions similar to those in Article 16 (if any) and provisions required by Laws and Regulations identified in the various Supplementary Conditions.

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.
- D. At the Owner's option, Contractor shall defend claims in connection with any alleged infringement of such rights.

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 observes that the Specifications or Drawings are at variance with any Laws or Regulations, Contractor shall give Engineer prompt written notice thereof, and any necessary changes will be authorized by one of the methods set forth in Paragraph 3.04. 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, except as may be set forth in the Supplementary Conditions.

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 and other closeout submittals specified 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 (if any) and other safety requirements 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. or for errors or omissions in a Shop Drawing or Sample.

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.
2. Contractor shall furnish required submittals with sufficient information and accuracy in order to obtain required approval of an item with no more than 3 submittals. Engineer will record Engineer's time for reviewing subsequent submittals of Shop Drawings, samples, or other items requiring approval and Contractor shall reimburse Owner for Engineer's charges for such time.
3. In the event that Contractor requests a change of a previously approved item, Contractor shall reimburse Owner for Engineer's charges for its review time unless the need for such change is beyond the control of Contractor.

6.18 *Continuing the Work*

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

6.19 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and in accordance with Subcontractor warranties, manufacturers and Suppliers warranties on equipment and material, and extended or special warranties and will not be defective for the correction period specified in 13.07. Owner and Engineer and ~~its~~ their officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.

1. Contractor shall obtain and preserve for the benefit of the Owner:

- a. manufacturers' and Suppliers' written warranties and guarantees on equipment and material incorporated into the Work;
- b. written warranties and guarantees from each Subcontractor engaged in the performance of the Work; and

2. extended or special warranties.

- 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

See various sections of the Supplementary Conditions for additional modifications and supplements

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; or;
 8. any acceptance by Owner or any failure to do so.

D. Contractor shall prepare and execute a written general warranty and guarantee applicable to the Work reflecting the provisions of this Paragraph 6.19, Article 13 and other applicable provisions of the Contract Documents pertaining to warranties and guarantees, Subcontractor, manufacturers and Supplier warranties and guarantees, and extended or special warranties and guarantees. Contractor shall submit this written general warranty and guarantee in accordance with Article 14 and the General Requirements.

E. Provision of any warranties or guarantees:

1. will not be effective to assign to Owner, or any of Owner's consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 8.09; and
- 8.2. will not be effective to assign to Engineer, or any of Engineer's consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09.

D.F. The warranty and guarantee provisions of this Paragraph 6.19 shall be in addition to and not in limitation of any other warranties, guarantees or remedies allowed by Law or required by the Contract Documents.

6.20 Indemnification

- A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify, defend, 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 or wrongful 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.
1. Without limiting the generality of the preceding Paragraph, the Contractor hereby specifically agrees to indemnify, defend, and hold harmless the Owner and Engineer from all such claims, losses or expenses which arise out of injuries of employees of the Contractor or any of its Subcontractors or Suppliers of any tier related to performance of the Work. It is the Owner's intention that all financial risk of injuries related to the Work be borne by the Contractor, and that the Owner have no financial responsibility, direct or indirect, for any such claims.
- 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, provided however, that if the claim, cost, loss or damage referred to in this Paragraph 6.20 results from failure of the Engineer to discover a condition, Underground Facilities or object which is underground or otherwise not reasonably observable by the Engineer, and if said failure to discover either was or should have been apparent to the Contractor in that the said condition or object is omitted from the Engineer's maps, Drawings, opinions, reports, surveys, Change Orders, designs or Specifications, then the Contractor shall be liable for indemnification of the Engineer and Owner under Paragraph 6.20 for claims, costs, losses and damages resulting from said failure to discover unless Contractor shall have notified Engineer of the existence

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and location of such condition or object prior to the occurrence of such claims, costs, losses and damages and in sufficient time for Engineer to have made provisions therefor; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage; or
3. caused by the negligent acts, errors or omissions of any of them.

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

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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.

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.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

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

8.02 *Replacement of Engineer*

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

8.03 *Furnish Data*

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

8.04 *Pay When Due*

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

8.05 *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 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.

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.

8.09 *Limitations on Owner's Responsibilities*

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

8.10 *Undisclosed Hazardous Environmental Condition*

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

8.11 *Evidence of Financial Arrangements*

- A. 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.

8.12 *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.

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

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 herein~~, 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.

- B. 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 perform the following.

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.

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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 onSite 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.

b. Report to Engineer whenever RPR believes that any part of Contractor's Work in progress will not produce a completed Project that conforms generally to the Contract Documents or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of Work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.

8. Inspections, Tests, and System Startups:

a. Verify that tests, equipment, and systems startups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, and that Contractor maintains adequate records thereof.

b. Observe, record, and report to Engineer appropriate details relative to the test procedures and systems startups.

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9. Records:

- a. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of Contractor, Subcontractors, and major Suppliers.
- b. Maintain records for use in preparing Project documentation.

10. Reports:

- a. Furnish periodic reports to Engineer as required of progress of the Work and of Contractor's compliance with the Progress Schedule and schedule of Shop Drawing and Sample submittals.
- b. Draft and recommend to Engineer proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.
- c. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, damage to property by fire or other causes, or the discovery of any Hazardous Environmental Condition or conditions that may impede the compliant operation of existing facilities on Site.

11. Payment Requests: Review Applications for Payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the Schedule of Values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.

12. Certificates, Operation and Maintenance Manuals: During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Specifications to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.

13. Completion:

- a. Participate in a Substantial Completion inspection, assist in the determination of Substantial Completion and the preparation of the Punch List (lists of items to be completed or corrected).
- b. Participate in a final inspection in the company of Engineer, Owner, and Contractor and prepare a final Punch List (list of items to be completed and deficiencies to be remedied).
- c. Observe whether all items on the final Punch List have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the Notice of Acceptability of the Work.

C. 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.

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. However, the Engineer shall have the right to direct the Contractor to perform the Work according to any sequence schedule set forth in the Contract Documents or established pursuant thereto. 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.
- F. Engineer will have no responsibility or authority:
 - 1. To order changes in construction which will result in additional costs or which will require extensions of Contract Times;
 - 2. To suspend all or any portion of Contractor's operations;
 - 3. To terminate all or any portion of the Work;
 - 4. To make final acceptance of all or any portion of the Work; and
 - 5. To operate or maintain any portion of the Work.

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 ~~30-14~~ days) after the start of the event giving rise thereto. Failure to comply with this notice requirement shall constitute a waiver of the Claim. 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 ~~60-30~~ 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.

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- 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.

G. Contractor shall not have the right to stop performance of the Work pending resolution of a Claim.

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.

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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. Small tools and manual equipment are not allowable and considered to be included in overhead.
 - 1) Rentals of construction equipment and machinery and the parts thereof whether rented from Contractor or others in accordance with rates published in current edition of the Rental Rate Blue Book® for construction equipment published by EquipmentWatch® (www.equipmentwatch.com). When Contractor-owned equipment is ordered by Owner or Engineer to be held at standby, equipment rental rates shall be 50% of normal rate. Rental or standby shall not include time that equipment is inoperative because of malfunction or breakdown and shall cease when the use thereof is no longer necessary for the Work. The rental rate, shall be determined as follows.
 - a) For equipment already on the Project: the monthly prorated rental rate by hourly use.
 - b) For equipment not on the Project: most cost effective daily, weekly or monthly rate. 1 month normal use = 176 hours.

- 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.

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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: (Not used)

~~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. Owner's Contingency Allowances:

1. Contractor agrees that Owner's a contingency allowance, if any, is for the sole use of Owner to cover ~~un~~estimated anticipated costs for certain items.
- 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 Owner's contingency allowances, and the Contract Price shall be correspondingly adjusted. Contractor shall not receive payment for any unused portion of the contingency allowance.

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.

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- 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.~~

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
 - 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 15-10 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 15-10 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, provided, however, that on any subcontracted work the total maximum fee to be paid by Owner under this subparagraph shall be no greater than 27 percent of the costs incurred by the Subcontractor who actually performs the Work;
 - d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
 - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
 - f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.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, acts of war or terrorism, or acts of God (force majeure).
- 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 war or terrorism, 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. ~~(Not Used) 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. Except where responsibility for a specific inspection or test is expressly allocated to Owner in the Specifications or by Laws and Regulations, 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 and may be deducted from amounts otherwise due the 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, including materials, equipment and supplies or as defined in manufacturers' and Suppliers' warranties (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 and the terms of this Paragraph 13.07 will continue to apply.
- 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, or immediately in the case of an emergency, 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.

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.

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 and provides an indemnity satisfactory to Owner for all claims, costs, losses and damages arising out of such Liens;
 - c. there are other items entitling Owner to a set-off against the amount recommended including liability for liquidated damages and correction of defective work by Owner or others; or
 - d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.

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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*

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

14.04 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use and final testing has been completed in accordance with the General Requirements, Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor in the Punchlist as incomplete) using the Notice of Substantial Completion form included in the Contract Documents, submit the Contractor's written general warranty and guarantee per Paragraph 6.19.D., 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 using the Certificate of Substantial Completion included in the Contract Documents. There shall be attached to the certificate a Punch List (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 Punch List (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.

See various sections of the Supplementary Conditions for additional modifications and supplements

- 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~~Punch 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.

B. Owner may request in writing that Contractor permit Owner to separately operate any part of the Work although it is not substantially complete subject to the following conditions.

- 1. A copy of such request will be sent to Engineer and, within a reasonable time thereafter, Owner, Contractor and Engineer shall make an inspection of that part of the Work not substantially complete to determine the status of completion and will prepare a Punch List before final payment.

See various sections of the Supplementary Conditions for additional modifications and supplements

2. If Contractor does not indicate in writing to Owner and Engineer that such part of the Work is not ready for separate operation by Owner, Engineer will finalize the Punch List and will deliver such list to Owner and Contractor, together with a written recommendation as to the division of responsibilities between Owner and Contractor with respect to security, operation, safety, maintenance, utilities, insurance, warranties and guarantees for that part of the Work pending final payment.
3. The Engineer's recommendation and Punch List will become binding upon Owner and Contractor at the time the Owner takes over and separately operates such part of the Work unless otherwise agreed in writing and so informed Engineer.
4. During such separate operation by Owner and prior to Substantial Completion of such part of the Work, Owner shall allow Contractor reasonable access to complete or correct Punch List and to complete other related Work.

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, warranties, updated Contractor's written general warranty and guarantee per Paragraph 6.19.D if modified, bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, and Engineer has indicated that the Work is acceptable (subject to the provisions of Paragraph 14.09), 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;
 - e-d. Notice of Completion; and

d.e. 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 as detailed on the Notice of Completion. 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; or;
 5. Contractor commences a voluntary case under any chapter of the Bankruptcy Code (Title 11, United States Code), as now or hereafter in effect, or if Contractor takes any equivalent or similar action by filing a petition or otherwise under any Laws and Regulations in effect at such time relating to the bankruptcy or insolvency; or

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6. a petition is filed against Contractor under any chapter of the Bankruptcy Code as now or hereafter in effect at the time of filing, or if a petition is filed seeking any such equivalent or similar relief against Contractor under any Laws and Regulations in effect at the time relating to bankruptcy or insolvency; or
 7. Contractor makes a general assignment for the benefit of creditors; or
 8. a trustee, receiver, custodian or agent of Contractor is appointed under applicable law or under contract, whose appointment or authority to take charge of property of Contractor is for the purpose of enforcing a Lien against such property or for the purpose of general administration of such property for the benefit of Contractor's creditors; or
 9. Contractor admits in writing its inability to pay its debts generally as they become due.
- 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~~reasonable claims, costs, losses, and damages (including but not limited to ~~all~~reasonable fees and charges of engineers, architects, attorneys, and other professionals and ~~all~~reasonable 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.

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- 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. Subject to the requirements in Paragraph 10.05, Owner and Contractor shall attempt in good faith to resolve all unsettled Claims, counterclaims, disputes and other matters in question between them arising out of or relating to the Contract Documents ("Disputes") promptly by negotiation, as follows. All negotiations pursuant to this clause are confidential and shall be treated as compromise and settlement negotiations for purposes of the Federal Rules of Evidence and state Rules of Evidence.

1. Either party may give the other party written notice of any Dispute not resolved.
2. Managers of both parties at levels at least one level above the Project personnel involved in the dispute shall meet at a mutually acceptable time and place within 5 business days after delivery of such notice, and thereafter as often as they reasonably deem necessary, to exchange relevant information and to attempt to resolve the Dispute.
3. If the matter has not been resolved within 30 days from the referral of the Dispute to the managers, or if no meeting has taken place within 10 days after such referral, either party may initiate mediation as provided hereinafter.

A.B. Subject to Paragraph 16.01.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.C. 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.D.~~ 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.

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 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.

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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.

17.06 *Headings*

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

17.07 *Professional Fees and Court Costs Included*

- A. In any action or proceeding to enforce or interpret any contractual provision or to resolve any conflict or dispute relating to or arising from this Contract, the prevailing party shall be entitled to recover, as part of its claim, award or judgment, reasonable attorneys' fees and associated costs and expenses, including expenses of engineering, claims and other consultants.

END OF SECTION

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SECTION 00 73 10

GENERAL SUPPLEMENTARY CONDITIONS

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. All provisions that are not so amended or supplemented remain in full force and effect unless amended or supplemented in another Section. The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in this Section have the meanings stated below, if any, 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 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-2.05 Before Starting Construction

Pursuant to subparagraph 2.05.A.1 regarding Progress Schedule, do not include weekends in Work hours.

Add the following immediately after Paragraph 2.05.B.

- C. Additionally, within 10 days after the Effective Date of the Agreement, Contractor shall submit a Construction Operations Plan incorporating the schedules submitted pursuant to Paragraph 2.05.A and covering the following.
 - 1. Milestones related to submittal schedules & material/equipment procurement/order placement.
 - 2. Construction methods and sequence of operations, including a dewatering plan, a stream bypass layout, and different phases of support of excavation as needed.
 - 3. Proposed Site access and material staging areas.
 - 4. 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-2.07 Initial Acceptance of Schedules

Add the following immediately after subparagraph 2.07.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 4.01 Availability of Lands

Pursuant to Paragraph 4.01.A, easements and rights-of-way exist for the Project and are reflected on the Drawings. Documentation is on file with Owner and available upon request.

SC-4.02 Subsurface and Physical Conditions

Pursuant to Paragraph 4.02.A,

1. the following reports of explorations and tests of subsurface conditions at or contiguous to the Site are known to Owner:
 - a. Report dated April 21, 2023 prepared by GZA GeoEnvironmental, Inc. (GZA), entitled Geotechnical Engineering Report North Street Culvert Replacement over White Brook Agawam, Massachusetts consisting of 261 pages

The "technical data" shall be limited to facts, measurements, field observations, boring logs, soil type and similar data. "Technical data" shall not include opinions regarding suitability of material, dewatering methodologies, soil stability, slope stabilization methods and other opinions or professional judgments.
2. The reports identified above are not part of the Contract Documents, but the "technical data" contained therein upon which Contractor may rely, as expressly identified and established above, are incorporated in the Contract Documents by reference and may be reflected in the Drawings. Contractor is not entitled to rely upon any other information and data known to or identified by Owner or Engineer.
3. Copies of reports identified above are included in Appendix A.

SC-4.05 Reference Points

Pursuant to Paragraph 4.05.A, surveys exist for the Project and are reflected on the Drawings.

SC-4.06 Hazardous Environmental Conditions at Site

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-5.04 Contractor's Insurance

Pursuant to Paragraph 5.04.A, in addition to the individuals and entities specified in subparagraph 5.04.B.1, include the following as loss payees.

NONE

SC-6.02 Labor; Working Hours

Add the following immediately after Paragraph 6.02.B.

1. Regular working hours for this Project are 7:00 a.m. to 3:00 p.m., Monday through Friday.
2. Work on weekends and holidays may be permitted only with minimum 48 hours' notice and approval by Owner.
3. Notify Owner in advance if it is necessary to work more than 8 hours in one day.

SC-6.08 Permits

Add the following immediately after Paragraph 6.08.A.

- A. Owner will waive Town fees for required Road Opening and Trenching Permits.
- B. Contractor shall comply with the following licenses and permits Owner has obtained for the Project reference in Section 00 31 00.

SC-6.09 Laws and Regulations

Add the following immediately after Paragraph 6.09.C.

- A. Contractor shall allow access to the Site and Project records by authorized local, State, and Federal agencies and representatives.

SC-6.13 Safety and Protection

Add the following immediately after Paragraph 6.13.B.

1. 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.
 - 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
 - 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
 - 1926 Subpart AA Confined Spaces in Construction
 - ANSI/ASSE A10 series of safety construction standards including the "Manual of Accident Prevention In Construction" published by The Associated General Contractors of America
 - 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

SC-7.01 Related Work at Site

Pursuant to Paragraph 7.01, Owner has not and does not intend to separately contract for other work on the Project at the Site.

SC-13.07 Correction Period

Add the following immediately after subparagraph 13.07.A.4.

- A. Maintain trench width pavement during the 1-year Warranty Period. Refill areas that have settled or are unsatisfactory for traffic.

SC-14.02 Progress Payments

Add the following language at the end of subparagraph 14.02.C.1.

For the purposes of this Paragraph, “Owner” shall mean “Owner’s approving authorities”.

SC-14.07 Final Payment

Add the following language at the end of subparagraph 14.07.C.1.

For the purposes of this Paragraph, “Owner” shall mean “Owner’s approving authorities”.

SC-16 DISPUTE RESOLUTION

Add the following immediately after Paragraph 16.01.D.

16.02 General

- A. The Contractor will require similar dispute resolution provisions in agreements with its Subcontractors and Suppliers.
- B. Contractor shall not have the right to stop performance of the Work pending resolution of a Claim or dispute.
- C. Notwithstanding any provision contained in this Article or elsewhere in the Contract Documents, the Owner reserves the right to institute legal action against the Contractor in any court of competent jurisdiction in connection with Claims and disputes between the Owner and the Contractor.

END OF SECTION

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SECTION 00 73 10

GENERAL SUPPLEMENTARY CONDITIONS

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. All provisions that are not so amended or supplemented remain in full force and effect unless amended or supplemented in another Section. The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in this Section have the meanings stated below, if any, 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 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-2.05 Before Starting Construction

Pursuant to subparagraph 2.05.A.1 regarding Progress Schedule, do not include weekends in Work hours.

Add the following immediately after Paragraph 2.05.B.

- C. Additionally, within 10 days after the Effective Date of the Agreement, Contractor shall submit a Construction Operations Plan incorporating the schedules submitted pursuant to Paragraph 2.05.A and covering the following.
1. Milestones related to submittal schedules & material/equipment procurement/order placement.
 2. Construction methods and sequence of operations, including a dewatering plan, a stream bypass layout, and different phases of support of excavation as needed.
 3. Proposed Site access and material staging areas.
 4. 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-2.07 Initial Acceptance of Schedules

Add the following immediately after subparagraph 2.07.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 4.01 Availability of Lands

Pursuant to Paragraph 4.01.A, easements and rights-of-way exist for the Project and are reflected on the Drawings. Documentation is on file with Owner and available upon request.

SC-4.02 Subsurface and Physical Conditions

Pursuant to Paragraph 4.02.A,

1. the following reports of explorations and tests of subsurface conditions at or contiguous to the Site are known to Owner:
 - a. Report dated April 21, 2023 prepared by GZA GeoEnvironmental, Inc. (GZA), entitled Geotechnical Engineering Report North Street Culvert Replacement over White Brook Agawam, Massachusetts consisting of 261 pages

The "technical data" shall be limited to facts, measurements, field observations, boring logs, soil type and similar data. "Technical data" shall not include opinions regarding suitability of material, dewatering methodologies, soil stability, slope stabilization methods and other opinions or professional judgments.
2. The reports identified above are not part of the Contract Documents, but the "technical data" contained therein upon which Contractor may rely, as expressly identified and established above, are incorporated in the Contract Documents by reference and may be reflected in the Drawings. Contractor is not entitled to rely upon any other information and data known to or identified by Owner or Engineer.
3. Copies of reports identified above are included in Appendix A.

SC-4.05 Reference Points

Pursuant to Paragraph 4.05.A, surveys exist for the Project and are reflected on the Drawings.

SC-4.06 Hazardous Environmental Conditions at Site

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-5.04 Contractor's Insurance

Pursuant to Paragraph 5.04.A, in addition to the individuals and entities specified in subparagraph 5.04.B.1, include the following as loss payees.

NONE

SC-6.02 Labor; Working Hours

Add the following immediately after Paragraph 6.02.B.

1. Regular working hours for this Project are 7:00 a.m. to 3:00 p.m., Monday through Friday.
2. Work on weekends and holidays may be permitted only with minimum 48 hours' notice and approval by Owner.
3. Notify Owner in advance if it is necessary to work more than 8 hours in one day.

SC-6.08 Permits

Add the following immediately after Paragraph 6.08.A.

- A. Owner will waive Town fees for required Road Opening and Trenching Permits.
- B. Contractor shall comply with the following licenses and permits Owner has obtained for the Project reference in Section 00 31 00.

SC-6.09 Laws and Regulations

Add the following immediately after Paragraph 6.09.C.

- A. Contractor shall allow access to the Site and Project records by authorized local, State, and Federal agencies and representatives.

SC-6.13 Safety and Protection

Add the following immediately after Paragraph 6.13.B.

1. 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.
 - 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
 - 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
 - 1926 Subpart AA Confined Spaces in Construction
 - ANSI/ASSE A10 series of safety construction standards including the "Manual of Accident Prevention In Construction" published by The Associated General Contractors of America
 - 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

SC-7.01 Related Work at Site

Pursuant to Paragraph 7.01, Owner has not and does not intend to separately contract for other work on the Project at the Site.

SC-13.07 Correction Period

Add the following immediately after subparagraph 13.07.A.4.

- A. Maintain trench width pavement during the 1-year Warranty Period. Refill areas that have settled or are unsatisfactory for traffic.

SC-14.02 Progress Payments

Add the following language at the end of subparagraph 14.02.C.1.

For the purposes of this Paragraph, “Owner” shall mean “Owner’s approving authorities”.

SC-14.07 Final Payment

Add the following language at the end of subparagraph 14.07.C.1.

For the purposes of this Paragraph, “Owner” shall mean “Owner’s approving authorities”.

SC-16 DISPUTE RESOLUTION

Add the following immediately after Paragraph 16.01.D.

16.02 General

- A. The Contractor will require similar dispute resolution provisions in agreements with its Subcontractors and Suppliers.
- B. Contractor shall not have the right to stop performance of the Work pending resolution of a Claim or dispute.
- C. Notwithstanding any provision contained in this Article or elsewhere in the Contract Documents, the Owner reserves the right to institute legal action against the Contractor in any court of competent jurisdiction in connection with Claims and disputes between the Owner and the Contractor.

END OF SECTION

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SECTION 00 73 43

WAGE RATE 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. All provisions that are not so amended or supplemented remain in full force and effect unless amended or supplemented in another Section. The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated within the Sections listed below, if any, which are applicable to both the singular and plural thereof.

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 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 Laws and Regulations.

The Project is subject to prevailing wage rates as issued by the Director of the Executive Office of Labor and Workforce Development (EOLWD), Department of Labor Standards (DLS) and the requirements of MGL Chapter 149, Sections 26, 27 and 27A to 27H. 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 <https://www.mass.gov/prevailing-wage-program> and <https://www.mass.gov/service-details/prevailing-wage-for-contractors>. See Guide to Contractors at <https://www.mass.gov/files/2017-07/dls-pw-bro-for-contractors-6-12.pdf>.

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.

This Project is also subject to Federal Minimum Wage Rates determined by the United States Department of Labor under the Davis-Bacon Act (40 USC 3141 et seq.).

Comply with the latest requirements available on the U.S. Department of Labor Wage and Hour Division website at www.dol.gov/whd/govcontracts/dbra.htm.

Wage determination schedules are included at the end of this section. In case of discrepancy between state wage rates and Federal wage rates, if any, the higher wage rates shall apply.

ATTACHMENTS

- A. Massachusetts Prevailing Wage Law forms (samples)
- B. Davis Bacon Wages
- C. Wage Determination Schedules

END OF SECTION

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WEEKLY PAYROLL RECORDS REPORT & STATEMENT OF COMPLIANCE

In accordance with Massachusetts General Law c. 149, §27B, a true and accurate record must be kept of all persons employed on the public works project for which the enclosed rates have been provided. A Payroll Form is available from the Department of Labor Standards (DLS) at www.mass.gov/dols/pw and includes all the information required to be kept by law. Every contractor or subcontractor is required to keep these records and preserve them for a period of three years from the date of completion of the contract.

On a weekly basis, every contractor and subcontractor is required to submit a certified copy of their weekly payroll records to the awarding authority; this includes the payroll forms and the Statement of Compliance form. The certified payroll records must be submitted either by regular mail or by e-mail to the awarding authority. Once collected, the awarding authority is required to preserve those records for three years from the date of completion of the project.

Each such contractor and subcontractor shall furnish weekly **and** within 15 days after completion of its portion of the work, to the awarding authority directly by first-class mail or e-mail, a statement, executed by the contractor, subcontractor or by any authorized officer thereof who supervised the payment of wages, this form, accompanied by their payroll:

STATEMENT OF COMPLIANCE

_____, 20_____

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

do hereby state:

That I pay or supervise the payment of the persons employed by

_____ on the _____
(Contractor, subcontractor or public body) (Building or project)

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

Signature _____

Title _____

MASSACHUSETTS WEEKLY CERTIFIED PAYROLL REPORT FORM



Company's Name:		Address:		Phone No.:		Payroll No.:												
Employer's Signature:		Title:		Contract No:		Work Week Ending:												
Awarding Authority's Name:		Public Works Project Name:		Public Works Project Location:		Min. Wage Rate Sheet Number												
General / Prime Contractor's Name:				"Employer" Hourly Fringe Benefit Contributions														
Employee Name & Complete Address	Work Classification:	Employee is OSHA 10 certified (?)	Appr. Rate (%)	Hours Worked							Project Hours (A) All Other Hours	Hourly Base Wage (B)	Health & Welfare Insurance (C)	ERISA Pension Plan (D)	Supp. Unemp. (E)	Total Hourly Prev. Wage (F)	(A x F)	
				Su.	Mo.	Tu.	We.	Th.	Fr.	Sa.							Sa.	Project Gross Wages

Are all apprentice employees identified above currently registered with the MA DLS's Division of Apprentice Standards? YES NO

For all apprentices performing work during the reporting period, attach a copy of the apprentice identification card issued by the Massachusetts Department of Labor Standards / Division of Apprentice Standards.

NOTE: Pursuant to MGL c. 149, s. 27B, every contractor and subcontractor is required to submit a **true and accurate** copy of their certified weekly payroll records to the awarding authority by first-class mail or e-mail. In addition, each weekly payroll must be accompanied by a statement of compliance signed by the employer. Failure to comply may result in the commencement of a criminal action or the issuance of a civil citation.



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 Agawam, MA
Contract Number: 0234052.00 **City/Town:** AGAWAM
Description of Work: Replacement of existing culvert, construction of additional culvert, installation of stormwater structures, and rehabilitation of existing roadway and surface conditions adjacent to crossing culverts.
Job Location: North Street, Agawam, MA 01001

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>	12/01/2021	\$35.95	\$13.41	\$16.01	\$0.00	\$65.37
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.02	\$13.41	\$16.01	\$0.00	\$65.44
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.14	\$13.41	\$16.01	\$0.00	\$65.56
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 3)</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 3 (BUILDING & SITE)</i>	06/01/2023	\$34.25	\$9.40	\$16.59	\$0.00	\$60.24
	12/01/2023	\$34.88	\$9.40	\$16.59	\$0.00	\$60.87
For apprentice rates see "Apprentice- LABORER"						
AIR TRACK OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	06/01/2023	\$34.25	\$9.40	\$14.53	\$0.00	\$58.18
	12/01/2023	\$34.88	\$9.40	\$14.53	\$0.00	\$58.81
	06/01/2024	\$36.08	\$9.40	\$14.53	\$0.00	\$60.01
	12/01/2024	\$37.28	\$9.40	\$14.53	\$0.00	\$61.21
	06/01/2025	\$38.53	\$9.40	\$14.53	\$0.00	\$62.46
	12/01/2025	\$39.77	\$9.40	\$14.53	\$0.00	\$63.70
	06/01/2026	\$41.07	\$9.40	\$14.53	\$0.00	\$65.00
	12/01/2026	\$42.36	\$9.40	\$14.53	\$0.00	\$66.29
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASBESTOS WORKER (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (SPRINGFIELD)</i>	12/01/2020	\$34.29	\$12.80	\$8.95	\$0.00	\$56.04
ASPHALT RAKER <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2023	\$33.75	\$9.40	\$16.59	\$0.00	\$59.74
	12/01/2023	\$34.38	\$9.00	\$16.59	\$0.00	\$59.97
For apprentice rates see "Apprentice- LABORER"						
ASPHALT RAKER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	06/01/2023	\$33.75	\$9.40	\$14.53	\$0.00	\$57.68
	12/01/2023	\$34.38	\$9.40	\$14.53	\$0.00	\$58.31
	06/01/2024	\$35.58	\$9.40	\$14.53	\$0.00	\$59.51
	12/01/2024	\$36.78	\$9.40	\$14.53	\$0.00	\$60.71
	06/01/2025	\$38.03	\$9.40	\$14.53	\$0.00	\$61.96
	12/01/2025	\$39.27	\$9.40	\$14.53	\$0.00	\$63.20
	06/01/2026	\$40.57	\$9.40	\$14.53	\$0.00	\$64.50
	12/01/2026	\$41.86	\$9.40	\$14.53	\$0.00	\$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
AUTOMATIC GRADER-EXCAVATOR (RECLAIMER) <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/2023	\$38.86	\$13.58	\$15.10	\$0.00	\$67.54
	12/01/2023	\$39.81	\$13.58	\$15.10	\$0.00	\$68.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER OPERATOR <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/2023	\$38.86	\$13.58	\$15.10	\$0.00	\$67.54
	12/01/2023	\$39.81	\$13.58	\$15.10	\$0.00	\$68.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2023	\$33.75	\$9.40	\$16.59	\$0.00	\$59.74
	12/01/2023	\$34.38	\$9.00	\$16.59	\$0.00	\$59.97
For apprentice rates see "Apprentice- LABORER"						
BATCH/CEMENT PLANT - ON SITE <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/2023	\$38.33	\$13.58	\$15.10	\$0.00	\$67.01
	12/01/2023	\$39.28	\$13.58	\$15.10	\$0.00	\$67.96
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2023	\$34.25	\$9.40	\$16.59	\$0.00	\$60.24
	12/01/2023	\$34.88	\$9.40	\$16.59	\$0.00	\$60.87
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	06/01/2023	\$34.25	\$9.40	\$14.53	\$0.00	\$58.18
	12/01/2023	\$34.88	\$9.40	\$14.53	\$0.00	\$58.81
	06/01/2024	\$36.08	\$9.40	\$14.53	\$0.00	\$60.01
	12/01/2024	\$37.28	\$9.40	\$14.53	\$0.00	\$61.21
	06/01/2025	\$38.53	\$9.40	\$14.53	\$0.00	\$62.46
	12/01/2025	\$39.77	\$9.40	\$14.53	\$0.00	\$63.70
	06/01/2026	\$41.07	\$9.40	\$14.53	\$0.00	\$65.00
	12/01/2026	\$42.36	\$9.40	\$14.53	\$0.00	\$66.29
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2023	\$47.37	\$7.07	\$20.31	\$0.00	\$74.75
	01/01/2024	\$48.12	\$7.07	\$20.60	\$0.00	\$75.79

Apprentice - BOILERMAKER - Local 29

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	\$30.79	\$7.07	\$13.22	\$0.00	\$51.08
2	65	\$30.79	\$7.07	\$13.22	\$0.00	\$51.08
3	70	\$33.16	\$7.07	\$14.23	\$0.00	\$54.46
4	75	\$35.53	\$7.07	\$15.24	\$0.00	\$57.84
5	80	\$37.90	\$7.07	\$16.25	\$0.00	\$61.22
6	85	\$40.26	\$7.07	\$17.28	\$0.00	\$64.61
7	90	\$42.63	\$7.07	\$18.28	\$0.00	\$67.98
8	95	\$45.00	\$7.07	\$19.32	\$0.00	\$71.39

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) <i>BRICKLAYERS LOCAL 3 (SPRINGFIELD/PITTSFIELD)</i>	02/01/2023	\$48.76	\$11.49	\$20.37	\$0.00	\$80.62
	08/01/2023	\$50.81	\$11.49	\$20.37	\$0.00	\$82.67
	02/01/2024	\$52.06	\$11.49	\$20.37	\$0.00	\$83.92
	08/01/2024	\$53.31	\$11.49	\$20.37	\$0.00	\$85.17
	02/01/2025	\$54.61	\$11.49	\$20.37	\$0.00	\$86.47
	08/01/2025	\$56.76	\$11.49	\$20.37	\$0.00	\$88.62
	02/01/2026	\$58.11	\$11.49	\$20.37	\$0.00	\$89.97
	08/01/2026	\$60.31	\$11.49	\$20.37	\$0.00	\$92.17
	02/01/2027	\$61.71	\$11.49	\$20.37	\$0.00	\$93.57

Apprentice - BRICK/PLASTER/CEMENT MASON - Local 3 Springfield/Pittsfield

Effective Date - 02/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.38	\$11.49	\$20.37	\$0.00	\$56.24
2	60	\$29.26	\$11.49	\$20.37	\$0.00	\$61.12
3	70	\$34.13	\$11.49	\$20.37	\$0.00	\$65.99
4	80	\$39.01	\$11.49	\$20.37	\$0.00	\$70.87
5	90	\$43.88	\$11.49	\$20.37	\$0.00	\$75.74

Effective Date - 08/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.41	\$11.49	\$20.37	\$0.00	\$57.27
2	60	\$30.49	\$11.49	\$20.37	\$0.00	\$62.35
3	70	\$35.57	\$11.49	\$20.37	\$0.00	\$67.43
4	80	\$40.65	\$11.49	\$20.37	\$0.00	\$72.51
5	90	\$45.73	\$11.49	\$20.37	\$0.00	\$77.59

Notes:

Apprentice to Journeyworker Ratio:1:5

BULLDOZER/POWER SHOVEL/TREE SHREDDER <i>/CLAM SHELL OPERATING</i>	06/01/2023	\$38.86	\$13.58	\$15.10	\$0.00	\$67.54
	12/01/2023	\$39.81	\$13.58	\$15.10	\$0.00	\$68.49
<i>ENGINEERS LOCAL 98</i>						
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
CAISSON & UNDERPINNING BOTTOM MAN <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2023	\$44.73	\$9.40	\$17.97	\$0.00	\$72.10
	12/01/2023	\$45.98	\$9.40	\$17.97	\$0.00	\$73.35
	06/01/2024	\$47.46	\$9.40	\$17.97	\$0.00	\$74.83
	12/01/2024	\$48.93	\$9.40	\$17.97	\$0.00	\$76.30
	06/01/2025	\$50.43	\$9.40	\$17.97	\$0.00	\$77.80
	12/01/2025	\$51.93	\$9.40	\$17.97	\$0.00	\$79.30
	06/01/2026	\$53.48	\$9.40	\$17.97	\$0.00	\$80.85
	12/01/2026	\$54.98	\$9.40	\$17.97	\$0.00	\$82.35

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CAISSON & UNDERPINNING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2023	\$43.58	\$9.40	\$17.97	\$0.00	\$70.95
	12/01/2023	\$44.83	\$9.40	\$17.97	\$0.00	\$72.20
	06/01/2024	\$46.31	\$9.40	\$17.97	\$0.00	\$73.68
	12/01/2024	\$47.78	\$9.40	\$17.97	\$0.00	\$75.15
	06/01/2025	\$49.28	\$9.40	\$17.97	\$0.00	\$76.65
	12/01/2025	\$50.78	\$9.40	\$17.97	\$0.00	\$78.15
	06/01/2026	\$52.33	\$9.40	\$17.97	\$0.00	\$79.70
	12/01/2026	\$53.83	\$9.40	\$17.97	\$0.00	\$81.20
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2023	\$43.58	\$9.40	\$17.97	\$0.00	\$70.95
	12/01/2023	\$44.83	\$9.40	\$17.97	\$0.00	\$72.20
	06/01/2024	\$46.31	\$9.40	\$17.97	\$0.00	\$73.68
	12/01/2024	\$47.78	\$9.40	\$17.97	\$0.00	\$75.15
	06/01/2025	\$49.28	\$9.40	\$17.97	\$0.00	\$76.65
	12/01/2025	\$50.78	\$9.40	\$17.97	\$0.00	\$78.15
	06/01/2026	\$52.33	\$9.40	\$17.97	\$0.00	\$79.70
	12/01/2026	\$53.83	\$9.40	\$17.97	\$0.00	\$81.20
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2023	\$33.75	\$9.40	\$16.59	\$0.00	\$59.74
	12/01/2023	\$34.38	\$9.00	\$16.59	\$0.00	\$59.97
For apprentice rates see "Apprentice- LABORER"						
CARPENTER <i>CARPENTERS LOCAL 336 - HAMPDEN HAMPSHIRE FRANKLIN</i>	03/01/2023	\$39.76	\$7.71	\$18.15	\$0.00	\$65.62

Apprentice - CARPENTER - Local 336 Hampden Hampshire Franklin

Effective Date - 03/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.88	\$7.71	\$1.38	\$0.00	\$28.97
2	60	\$23.86	\$7.71	\$1.38	\$0.00	\$32.95
3	70	\$27.83	\$7.71	\$13.95	\$0.00	\$49.49
4	75	\$29.82	\$7.71	\$13.95	\$0.00	\$51.48
5	80	\$31.81	\$7.71	\$15.35	\$0.00	\$54.87
6	80	\$31.81	\$7.71	\$15.35	\$0.00	\$54.87
7	90	\$35.78	\$7.71	\$16.75	\$0.00	\$60.24
8	90	\$35.78	\$7.71	\$16.75	\$0.00	\$60.24

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
Step 1&2 \$26.46/ 3&4 \$31.82/ 5&6 \$50.38/ 7&8 \$55.77

Apprentice to Journeyworker Ratio:1:5

CARPENTER WOOD FRAME <i>CARPENTERS-ZONE 3 (Wood Frame)</i>	04/01/2023	\$24.16	\$7.21	\$4.80	\$0.00	\$36.17
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All Aspects of New Wood Frame Work

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - CARPENTER (Wood Frame) - Zone 3

Effective Date - 04/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$14.50	\$7.21	\$0.00	\$0.00	\$21.71
2	60	\$14.50	\$7.21	\$0.00	\$0.00	\$21.71
3	65	\$15.70	\$7.21	\$0.00	\$0.00	\$22.91
4	70	\$16.91	\$7.21	\$0.00	\$0.00	\$24.12
5	75	\$18.12	\$7.21	\$3.80	\$0.00	\$29.13
6	80	\$19.33	\$7.21	\$3.80	\$0.00	\$30.34
7	85	\$20.54	\$7.21	\$3.80	\$0.00	\$31.55
8	90	\$21.74	\$7.21	\$3.80	\$0.00	\$32.75

Notes:

% Indentured After 10/1/17; 45/45/55/55/70/70/80/80
 Step 1&2 \$17.86/ 3&4 \$20.22/ 5&6 \$27.57/ 7&8 \$29.94

Apprentice to Journeyworker Ratio:1:5

CEMENT MASONRY/PLASTERING	01/01/2023	\$44.81	\$12.70	\$17.97	\$0.87	\$76.35
BRICKLAYERS LOCAL 3 (SPRINGFIELD/PITTSFIELD)	07/01/2023	\$45.82	\$12.70	\$17.97	\$0.87	\$77.36
	01/01/2024	\$46.83	\$12.70	\$17.97	\$0.87	\$78.37

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - CEMENT MASONRY/PLASTERING - Springfield/Pittsfield

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.41	\$12.70	\$15.49	\$0.00	\$50.60
2	60	\$26.89	\$12.70	\$17.97	\$0.87	\$58.43
3	65	\$29.13	\$12.70	\$17.97	\$0.87	\$60.67
4	70	\$31.37	\$12.70	\$17.97	\$0.87	\$62.91
5	75	\$33.61	\$12.70	\$17.97	\$0.87	\$65.15
6	80	\$35.85	\$12.70	\$17.97	\$0.87	\$67.39
7	90	\$40.33	\$12.70	\$17.97	\$0.87	\$71.87

Effective Date - 07/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.91	\$12.70	\$15.49	\$0.00	\$51.10
2	60	\$27.49	\$12.70	\$17.97	\$0.87	\$59.03
3	65	\$29.78	\$12.70	\$17.97	\$0.87	\$61.32
4	70	\$32.07	\$12.70	\$17.97	\$0.87	\$63.61
5	75	\$34.37	\$12.70	\$17.97	\$0.87	\$65.91
6	80	\$36.66	\$12.70	\$17.97	\$0.87	\$68.20
7	90	\$41.24	\$12.70	\$17.97	\$0.87	\$72.78

Notes:

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

Apprentice to Journeyworker Ratio:1:3

CHAIN SAW OPERATOR <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2023	\$33.75	\$9.40	\$16.59	\$0.00	\$59.74
	12/01/2023	\$34.38	\$9.00	\$16.59	\$0.00	\$59.97
For apprentice rates see "Apprentice- LABORER"						
COMPRESSOR OPERATOR <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/2023	\$38.33	\$13.58	\$15.10	\$0.00	\$67.01
	12/01/2023	\$39.28	\$13.58	\$15.10	\$0.00	\$67.96
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
CRANE OPERATOR <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/2023	\$42.36	\$13.58	\$15.10	\$0.00	\$71.04
	12/01/2023	\$43.31	\$13.58	\$15.10	\$0.00	\$71.99
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DELEADER (BRIDGE) <i>PAINTERS LOCAL 35 - ZONE 3</i>	01/01/2023	\$56.06	\$8.65	\$23.05	\$0.00	\$87.76
	07/01/2023	\$57.26	\$8.65	\$23.05	\$0.00	\$88.96
	01/01/2024	\$58.46	\$8.65	\$23.05	\$0.00	\$90.16
	07/01/2024	\$59.66	\$8.65	\$23.05	\$0.00	\$91.36
	01/01/2025	\$60.86	\$8.65	\$23.05	\$0.00	\$92.56

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.03	\$8.65	\$0.00	\$0.00	\$36.68
2	55	\$30.83	\$8.65	\$6.27	\$0.00	\$45.75
3	60	\$33.64	\$8.65	\$6.84	\$0.00	\$49.13
4	65	\$36.44	\$8.65	\$7.41	\$0.00	\$52.50
5	70	\$39.24	\$8.65	\$19.63	\$0.00	\$67.52
6	75	\$42.05	\$8.65	\$20.20	\$0.00	\$70.90
7	80	\$44.85	\$8.65	\$20.77	\$0.00	\$74.27
8	90	\$50.45	\$8.65	\$21.91	\$0.00	\$81.01

Effective Date - 07/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.63	\$8.65	\$0.00	\$0.00	\$37.28
2	55	\$31.49	\$8.65	\$6.27	\$0.00	\$46.41
3	60	\$34.36	\$8.65	\$6.84	\$0.00	\$49.85
4	65	\$37.22	\$8.65	\$7.41	\$0.00	\$53.28
5	70	\$40.08	\$8.65	\$19.63	\$0.00	\$68.36
6	75	\$42.95	\$8.65	\$20.20	\$0.00	\$71.80
7	80	\$45.81	\$8.65	\$20.77	\$0.00	\$75.23
8	90	\$51.53	\$8.65	\$21.91	\$0.00	\$82.09

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

DEMO: ADZEMAN LABORERS - ZONE 3 (BUILDING & SITE)	06/01/2023	\$43.73	\$9.40	\$17.82	\$0.00	\$70.95
	12/01/2023	\$44.98	\$9.40	\$17.82	\$0.00	\$72.20

For apprentice rates see "Apprentice- LABORER"

DEMO: BACKHOE/LOADER/HAMMER OPERATOR LABORERS - ZONE 3 (BUILDING & SITE)	06/01/2023	\$44.73	\$9.40	\$17.82	\$0.00	\$71.95
	12/01/2023	\$45.98	\$9.40	\$17.82	\$0.00	\$73.20

For apprentice rates see "Apprentice- LABORER"

DEMO: BURNERS LABORERS - ZONE 3 (BUILDING & SITE)	06/01/2023	\$44.48	\$9.40	\$17.82	\$0.00	\$71.70
	12/01/2023	\$45.73	\$9.40	\$17.82	\$0.00	\$72.95

For apprentice rates see "Apprentice- LABORER"

DEMO: CONCRETE CUTTER/SAWYER LABORERS - ZONE 3 (BUILDING & SITE)	06/01/2023	\$44.73	\$9.40	\$17.82	\$0.00	\$71.95
	12/01/2023	\$45.98	\$9.40	\$17.82	\$0.00	\$73.20

For apprentice rates see "Apprentice- LABORER"

DEMO: JACKHAMMER OPERATOR LABORERS - ZONE 3 (BUILDING & SITE)	06/01/2023	\$44.48	\$9.40	\$17.82	\$0.00	\$71.70
	12/01/2023	\$45.73	\$9.40	\$17.82	\$0.00	\$72.95

For apprentice rates see "Apprentice- LABORER"

DEMO: WRECKING LABORER LABORERS - ZONE 3 (BUILDING & SITE)	06/01/2023	\$43.73	\$9.40	\$17.82	\$0.00	\$70.95
	12/01/2023	\$44.98	\$9.40	\$17.82	\$0.00	\$72.20

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 3)</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 3)</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 3)</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 3)</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 (Including Core Drilling) <i>ELECTRICIANS LOCAL 7</i>	01/01/2023	\$47.01	\$12.50	\$13.96	\$0.00	\$73.47

Apprentice - ELECTRICIAN - Local 7

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$18.80	\$7.50	\$0.56	\$0.00	\$26.86
2	45	\$21.15	\$7.50	\$0.63	\$0.00	\$29.28
3	50	\$23.51	\$12.50	\$7.26	\$0.00	\$43.27
4	55	\$25.86	\$12.50	\$7.33	\$0.00	\$45.69
5	65	\$30.56	\$12.50	\$9.27	\$0.00	\$52.33
6	70	\$32.91	\$12.50	\$10.54	\$0.00	\$55.95

Notes:

Steps 1-2 are 1000 hrs; Steps 3-6 are 1500 hrs.

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

ELEVATOR CONSTRUCTOR <i>ELEVATOR CONSTRUCTORS LOCAL 41</i>	01/01/2023	\$61.13	\$16.08	\$20.56	\$0.00	\$97.77
	01/01/2024	\$61.98	\$16.18	\$20.96	\$0.00	\$99.12
	01/01/2025	\$62.83	\$16.28	\$21.36	\$0.00	\$100.47
	01/01/2026	\$63.68	\$16.38	\$21.76	\$0.00	\$101.82
	01/01/2027	\$64.53	\$16.48	\$22.16	\$0.00	\$103.17

Apprentice - ELEVATOR CONSTRUCTOR - Local 41

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$30.57	\$16.08	\$0.00	\$0.00	\$46.65
2	55	\$33.62	\$16.08	\$20.56	\$0.00	\$70.26
3	65	\$39.73	\$16.08	\$20.56	\$0.00	\$76.37
4	70	\$42.79	\$16.08	\$20.56	\$0.00	\$79.43
5	80	\$48.90	\$16.08	\$20.56	\$0.00	\$85.54

Effective Date - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$30.99	\$16.18	\$0.00	\$0.00	\$47.17
2	55	\$34.09	\$16.18	\$20.96	\$0.00	\$71.23
3	65	\$40.29	\$16.18	\$20.96	\$0.00	\$77.43
4	70	\$43.39	\$16.18	\$20.96	\$0.00	\$80.53
5	80	\$49.58	\$16.18	\$20.96	\$0.00	\$86.72

Notes:

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

Apprentice to Journeyworker Ratio:1:1

ELEVATOR CONSTRUCTOR HELPER	01/01/2023	\$42.79	\$16.08	\$20.56	\$0.00	\$79.43
<i>ELEVATOR CONSTRUCTORS LOCAL 41</i>	01/01/2024	\$43.39	\$16.18	\$20.96	\$0.00	\$80.53
	01/01/2025	\$43.98	\$16.28	\$21.36	\$0.00	\$81.62
	01/01/2026	\$44.58	\$16.38	\$21.76	\$0.00	\$82.72
	01/01/2027	\$45.17	\$16.48	\$22.16	\$0.00	\$83.81

For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"

FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY)	06/01/2023	\$33.75	\$9.40	\$14.53	\$0.00	\$57.68
<i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	12/01/2023	\$34.38	\$9.40	\$14.53	\$0.00	\$58.31
	06/01/2024	\$35.58	\$9.40	\$14.53	\$0.00	\$59.51
	12/01/2024	\$36.78	\$9.40	\$14.53	\$0.00	\$60.71
	06/01/2025	\$38.03	\$9.40	\$14.53	\$0.00	\$61.96
	12/01/2025	\$39.27	\$9.40	\$14.53	\$0.00	\$63.20
	06/01/2026	\$40.57	\$9.40	\$14.53	\$0.00	\$64.50
	12/01/2026	\$41.86	\$9.40	\$14.53	\$0.00	\$65.79

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

FIELD ENG.INST/ROD-BLDG,SITE,HVY/HWY	06/01/1999	\$18.84	\$4.80	\$4.10	\$0.00	\$27.74
<i>OPERATING ENGINEERS LOCAL 98</i>						

FIELD ENG.PARTY CHIEF:BLDG,SITE,HVY/HWY	06/01/1999	\$21.33	\$4.80	\$4.10	\$0.00	\$30.23
<i>OPERATING ENGINEERS LOCAL 98</i>						

FIELD ENG.SURVEY CHIEF-BLDG,SITE,HVY/HWY	06/01/1999	\$22.33	\$4.80	\$4.10	\$0.00	\$31.23
<i>OPERATING ENGINEERS LOCAL 98</i>						

FIRE ALARM INSTALLER	01/01/2023	\$47.01	\$12.50	\$13.96	\$0.00	\$73.47
<i>ELECTRICIANS LOCAL 7</i>						

For apprentice rates see "Apprentice- ELECTRICIAN"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING <i>ELECTRICIANS</i>	01/01/2023	\$47.01	\$12.50	\$13.96	\$0.00	\$73.47
<i>LOCAL 7</i> For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/2023	\$38.33	\$13.58	\$15.10	\$0.00	\$67.01
	12/01/2023	\$39.28	\$13.58	\$15.10	\$0.00	\$67.96

Apprentice - OPERATING ENGINEERS - Local 98 Class 3

Effective Date - 06/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$23.00	\$13.58	\$15.10	\$0.00	\$51.68
2	70	\$26.83	\$13.58	\$15.10	\$0.00	\$55.51
3	80	\$30.66	\$13.58	\$15.10	\$0.00	\$59.34
4	90	\$34.50	\$13.58	\$15.10	\$0.00	\$63.18

Effective Date - 12/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$23.57	\$13.58	\$15.10	\$0.00	\$52.25
2	70	\$27.50	\$13.58	\$15.10	\$0.00	\$56.18
3	80	\$31.42	\$13.58	\$15.10	\$0.00	\$60.10
4	90	\$35.35	\$13.58	\$15.10	\$0.00	\$64.03

Notes:

Steps 1-2 are 1000 hrs.; Steps 3-4 are 2000 hrs.

Apprentice to Journeyworker Ratio:1:6

FLAGGER & SIGNALER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	06/01/2023	\$25.98	\$9.40	\$14.41	\$0.00	\$49.79
	12/01/2023	\$25.98	\$9.40	\$14.41	\$0.00	\$49.79
	06/01/2024	\$27.01	\$9.40	\$14.41	\$0.00	\$50.82
	12/01/2024	\$27.01	\$9.40	\$14.41	\$0.00	\$50.82
	06/01/2025	\$28.09	\$9.40	\$14.41	\$0.00	\$51.90
	12/01/2025	\$28.09	\$9.40	\$14.41	\$0.00	\$51.90
	06/01/2026	\$29.21	\$9.40	\$14.41	\$0.00	\$53.02
	12/01/2026	\$29.21	\$9.40	\$14.41	\$0.00	\$53.02

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

FLOORCOVERER <i>FLOORCOVERERS LOCAL 2168 ZONE III</i>	03/01/2022	\$39.66	\$7.71	\$18.15	\$0.00	\$65.52
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Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - FLOORCOVERER - Local 2168 Zone III

Effective Date - 03/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.83	\$7.71	\$1.40	\$0.00	\$28.94
2	55	\$21.81	\$7.71	\$1.40	\$0.00	\$30.92
3	60	\$23.80	\$7.71	\$13.95	\$0.00	\$45.46
4	65	\$25.78	\$7.71	\$13.95	\$0.00	\$47.44
5	70	\$27.76	\$7.71	\$15.35	\$0.00	\$50.82
6	75	\$29.75	\$7.71	\$15.35	\$0.00	\$52.81
7	80	\$31.73	\$7.71	\$16.75	\$0.00	\$56.19
8	85	\$33.71	\$7.71	\$16.75	\$0.00	\$58.17

Notes: Steps are 750 hrs.
 % After 10/1/17; 45/45/55/55/70/70/80/80 (1500hr Steps)
 Step 1&2 \$26.21/ 3&4 \$31.49/ 5&6 \$49.96/ 7&8 \$55.29

Apprentice to Journeyworker Ratio:1:1

FORK LIFT <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/2023	\$38.55	\$13.58	\$15.10	\$0.00	\$67.23
	12/01/2023	\$39.50	\$13.58	\$15.10	\$0.00	\$68.18
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GENERATORS/LIGHTING PLANTS <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/2023	\$35.10	\$13.58	\$15.10	\$0.00	\$63.78
	12/01/2023	\$36.05	\$13.58	\$15.10	\$0.00	\$64.73
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) <i>GLAZIERS LOCAL 1333</i>	06/01/2020	\$39.18	\$10.80	\$10.45	\$0.00	\$60.43

Apprentice - GLAZIER - Local 1333

Effective Date - 06/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.59	\$10.80	\$1.80	\$0.00	\$32.19
2	56	\$22.04	\$10.80	\$1.80	\$0.00	\$34.64
3	63	\$24.49	\$10.80	\$2.45	\$0.00	\$37.74
4	69	\$26.94	\$10.80	\$2.45	\$0.00	\$40.19
5	75	\$29.39	\$10.80	\$3.15	\$0.00	\$43.34
6	81	\$31.83	\$10.80	\$3.15	\$0.00	\$45.78
7	88	\$34.28	\$10.80	\$10.45	\$0.00	\$55.53
8	94	\$36.73	\$10.80	\$10.45	\$0.00	\$57.98

Notes:

Apprentice to Journeyworker Ratio:1:3

GRADER/TRENCHING MACHINE/DERRICK <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/2023	\$38.86	\$13.58	\$15.10	\$0.00	\$67.54
	12/01/2023	\$39.81	\$13.58	\$15.10	\$0.00	\$68.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HVAC (DUCTWORK) <i>SHEETMETAL WORKERS LOCAL 63</i>	01/01/2023	\$41.30	\$10.64	\$17.54	\$2.05	\$71.53
	07/01/2023	\$42.55	\$10.64	\$17.54	\$2.05	\$72.78
	01/01/2024	\$43.80	\$10.64	\$17.54	\$2.05	\$74.03
	07/01/2024	\$45.05	\$10.64	\$17.54	\$2.05	\$75.28
	01/01/2025	\$46.30	\$10.64	\$17.54	\$2.05	\$76.53
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (ELECTRICAL CONTROLS) <i>ELECTRICIANS LOCAL 7</i>	01/01/2023	\$47.01	\$12.50	\$13.96	\$0.00	\$73.47
	For apprentice rates see "Apprentice- ELECTRICIAN"					
HVAC (TESTING AND BALANCING - AIR) <i>SHEETMETAL WORKERS LOCAL 63</i>	01/01/2023	\$41.30	\$10.64	\$17.54	\$2.05	\$71.53
	07/01/2023	\$42.55	\$10.64	\$17.54	\$2.05	\$72.78
	01/01/2024	\$43.80	\$10.64	\$17.54	\$2.05	\$74.03
	07/01/2024	\$45.05	\$10.64	\$17.54	\$2.05	\$75.28
	01/01/2025	\$46.30	\$10.64	\$17.54	\$2.05	\$76.53
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING -WATER) <i>PLUMBERS & PIPEFITTERS LOCAL 104</i>	03/17/2023	\$46.96	\$9.55	\$17.10	\$0.00	\$73.61
	09/17/2023	\$47.96	\$9.55	\$17.10	\$0.00	\$74.61
	03/17/2024	\$49.21	\$9.55	\$17.10	\$0.00	\$75.86
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC <i>PLUMBERS & PIPEFITTERS LOCAL 104</i>	03/17/2023	\$46.96	\$9.55	\$17.10	\$0.00	\$73.61
	09/17/2023	\$47.96	\$9.55	\$17.10	\$0.00	\$74.61
	03/17/2024	\$49.21	\$9.55	\$17.10	\$0.00	\$75.86
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	06/01/2023	\$34.25	\$9.40	\$14.53	\$0.00	\$58.18
	12/01/2023	\$34.88	\$9.40	\$14.53	\$0.00	\$58.81
	06/01/2024	\$36.08	\$9.40	\$14.53	\$0.00	\$60.01
	12/01/2024	\$37.28	\$9.40	\$14.53	\$0.00	\$61.21
	06/01/2025	\$38.53	\$9.40	\$14.53	\$0.00	\$62.46
	12/01/2025	\$39.77	\$9.40	\$14.53	\$0.00	\$63.70
	06/01/2026	\$41.07	\$9.40	\$14.53	\$0.00	\$65.00
12/01/2026	\$42.36	\$9.40	\$14.53	\$0.00	\$66.29	
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
INSULATOR (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (SPRINGFIELD)</i>	09/01/2022	\$44.05	\$13.80	\$17.14	\$0.00	\$74.99

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

Effective Date - 09/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.03	\$13.80	\$12.42	\$0.00	\$48.25
2	60	\$26.43	\$13.80	\$13.36	\$0.00	\$53.59
3	70	\$30.84	\$13.80	\$14.31	\$0.00	\$58.95
4	80	\$35.24	\$13.80	\$15.25	\$0.00	\$64.29

Notes:

Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
IRONWORKER/WELDER	03/16/2023	\$38.91	\$8.25	\$22.70	\$0.00	\$69.86
<i>IRONWORKERS LOCAL 7 (SPRINGFIELD AREA)</i>	09/16/2023	\$39.81	\$8.25	\$22.70	\$0.00	\$70.76
	03/16/2024	\$40.66	\$8.25	\$22.70	\$0.00	\$71.61

Apprentice - IRONWORKER - Local 7 Springfield

Effective Date - 03/16/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$23.35	\$8.25	\$22.70	\$0.00	\$54.30
2	70	\$27.24	\$8.25	\$22.70	\$0.00	\$58.19
3	75	\$29.18	\$8.25	\$22.70	\$0.00	\$60.13
4	80	\$31.13	\$8.25	\$22.70	\$0.00	\$62.08
5	85	\$33.07	\$8.25	\$22.70	\$0.00	\$64.02
6	90	\$35.02	\$8.25	\$22.70	\$0.00	\$65.97

Effective Date - 09/16/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$23.89	\$8.25	\$22.70	\$0.00	\$54.84
2	70	\$27.87	\$8.25	\$22.70	\$0.00	\$58.82
3	75	\$29.86	\$8.25	\$22.70	\$0.00	\$60.81
4	80	\$31.85	\$8.25	\$22.70	\$0.00	\$62.80
5	85	\$33.84	\$8.25	\$22.70	\$0.00	\$64.79
6	90	\$35.83	\$8.25	\$22.70	\$0.00	\$66.78

Notes:

Apprentice to Journeyworker Ratio:1:4

JACKHAMMER & PAVING BREAKER OPERATOR	06/01/2023	\$33.75	\$9.40	\$16.59	\$0.00	\$59.74
<i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	12/01/2023	\$34.38	\$9.00	\$16.59	\$0.00	\$59.97
For apprentice rates see "Apprentice- LABORER"						
LABORER	06/01/2023	\$33.50	\$9.40	\$16.59	\$0.00	\$59.49
<i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	12/01/2023	\$34.13	\$9.40	\$16.59	\$0.00	\$60.12

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - LABORER - Zone 3 Building & Site

Effective Date - 06/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$20.10	\$9.40	\$16.59	\$0.00	\$46.09
2	70	\$23.45	\$9.40	\$16.59	\$0.00	\$49.44
3	80	\$26.80	\$9.40	\$16.59	\$0.00	\$52.79
4	90	\$30.15	\$9.40	\$16.59	\$0.00	\$56.14

Effective Date - 12/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$20.48	\$9.40	\$16.59	\$0.00	\$46.47
2	70	\$23.89	\$9.40	\$16.59	\$0.00	\$49.88
3	80	\$27.30	\$9.40	\$16.59	\$0.00	\$53.29
4	90	\$30.72	\$9.40	\$16.59	\$0.00	\$56.71

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER (HEAVY & HIGHWAY)	06/01/2023	\$33.50	\$9.40	\$14.53	\$0.00	\$57.43
LABORERS - ZONE 3 (HEAVY & HIGHWAY)	12/01/2023	\$34.13	\$9.40	\$14.53	\$0.00	\$58.06
	06/01/2024	\$35.33	\$9.40	\$14.53	\$0.00	\$59.26
	12/01/2024	\$36.53	\$9.40	\$14.53	\$0.00	\$60.46
	06/01/2025	\$37.78	\$9.40	\$14.53	\$0.00	\$61.71
	12/01/2025	\$39.02	\$9.40	\$14.53	\$0.00	\$62.95
	06/01/2026	\$40.32	\$9.40	\$14.53	\$0.00	\$64.25
	12/01/2026	\$41.61	\$9.40	\$14.53	\$0.00	\$65.54

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - LABORER (Heavy & Highway) - Zone 3

Effective Date - 06/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$20.10	\$9.40	\$14.53	\$0.00	\$44.03
2	70	\$23.45	\$9.40	\$14.53	\$0.00	\$47.38
3	80	\$26.80	\$9.40	\$14.53	\$0.00	\$50.73
4	90	\$30.15	\$9.40	\$14.53	\$0.00	\$54.08

Effective Date - 12/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$20.48	\$9.40	\$14.53	\$0.00	\$44.41
2	70	\$23.89	\$9.40	\$14.53	\$0.00	\$47.82
3	80	\$27.30	\$9.40	\$14.53	\$0.00	\$51.23
4	90	\$30.72	\$9.40	\$14.53	\$0.00	\$54.65

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER: CARPENTER TENDER
LABORERS - ZONE 3 (BUILDING & SITE)

06/01/2023	\$33.50	\$9.40	\$16.59	\$0.00	\$59.49
12/01/2023	\$34.13	\$9.40	\$16.59	\$0.00	\$60.12

For apprentice rates see "Apprentice- LABORER"

LABORER: CEMENT FINISHER TENDER
LABORERS - ZONE 3 (BUILDING & SITE)

06/01/2023	\$33.50	\$9.40	\$16.59	\$0.00	\$59.49
12/01/2023	\$34.13	\$9.40	\$16.59	\$0.00	\$60.12

For apprentice rates see "Apprentice- LABORER"

LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER
LABORERS - ZONE 3 (BUILDING & SITE)

06/01/2023	\$33.47	\$9.40	\$16.72	\$0.00	\$59.59
12/01/2023	\$34.10	\$9.40	\$16.72	\$0.00	\$60.22

For apprentice rates see "Apprentice- LABORER"

LABORER: MASON TENDER
LABORERS - ZONE 3 (BUILDING & SITE)

06/01/2023	\$34.50	\$9.40	\$16.59	\$0.00	\$60.49
12/01/2023	\$35.13	\$9.40	\$16.59	\$0.00	\$61.12

For apprentice rates see "Apprentice- LABORER"

LABORER: MASON TENDER (HEAVY & HIGHWAY)
LABORERS - ZONE 3 (HEAVY & HIGHWAY)

06/01/2023	\$33.75	\$9.40	\$14.53	\$0.00	\$57.68
12/01/2023	\$34.38	\$9.40	\$14.53	\$0.00	\$58.31
06/01/2024	\$35.58	\$9.40	\$14.53	\$0.00	\$59.51
12/01/2024	\$36.78	\$9.40	\$14.53	\$0.00	\$60.71
06/01/2025	\$38.03	\$9.40	\$14.53	\$0.00	\$61.96
12/01/2025	\$39.27	\$9.40	\$14.53	\$0.00	\$63.20
06/01/2026	\$40.57	\$9.40	\$14.53	\$0.00	\$64.50
12/01/2026	\$41.86	\$9.40	\$14.53	\$0.00	\$65.79

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

LABORER: MULTI-TRADE TENDER
LABORERS - ZONE 3 (BUILDING & SITE)

06/01/2023	\$33.50	\$9.40	\$16.59	\$0.00	\$59.49
12/01/2023	\$34.13	\$9.40	\$16.59	\$0.00	\$60.12

For apprentice rates see "Apprentice- LABORER"

LABORER: TREE REMOVER
LABORERS - ZONE 3 (BUILDING & SITE)

06/01/2023	\$33.50	\$9.40	\$16.59	\$0.00	\$59.49
12/01/2023	\$34.13	\$9.40	\$16.59	\$0.00	\$60.12

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"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LASER BEAM OPERATOR <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2023	\$33.75	\$9.40	\$16.59	\$0.00	\$59.74
	12/01/2023	\$34.38	\$9.00	\$16.59	\$0.00	\$59.97
For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	06/01/2023	\$33.75	\$9.40	\$14.53	\$0.00	\$57.68
	12/01/2023	\$34.38	\$9.40	\$14.53	\$0.00	\$58.31
	06/01/2024	\$35.58	\$9.40	\$14.53	\$0.00	\$59.51
	12/01/2024	\$36.78	\$9.40	\$14.53	\$0.00	\$60.71
	06/01/2025	\$38.03	\$9.40	\$14.53	\$0.00	\$61.96
	12/01/2025	\$39.27	\$9.40	\$14.53	\$0.00	\$63.20
	06/01/2026	\$40.57	\$9.40	\$14.53	\$0.00	\$64.50
	12/01/2026	\$41.86	\$9.40	\$14.53	\$0.00	\$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						

MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE</i>	02/01/2023	\$39.73	\$11.49	\$19.53	\$0.00	\$70.75
	08/01/2023	\$41.37	\$11.49	\$19.53	\$0.00	\$72.39
	02/01/2024	\$42.37	\$11.49	\$19.53	\$0.00	\$73.39
	08/01/2024	\$44.05	\$11.49	\$19.53	\$0.00	\$75.07
	02/01/2025	\$45.90	\$11.49	\$19.53	\$0.00	\$76.92
	08/01/2025	\$46.81	\$11.49	\$19.53	\$0.00	\$77.83
	02/01/2026	\$47.89	\$11.49	\$19.53	\$0.00	\$78.91
	08/01/2026	\$49.65	\$11.49	\$19.53	\$0.00	\$80.67
	02/01/2027	\$50.77	\$11.49	\$19.53	\$0.00	\$81.79

Apprentice - MARBLE-TILE FINISHER-Local 3 Marble/Tile (Spr/Pitt)

Effective Date - 02/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.87	\$11.49	\$19.53	\$0.00	\$50.89
2	60	\$23.84	\$11.49	\$19.53	\$0.00	\$54.86
3	70	\$27.81	\$11.49	\$19.53	\$0.00	\$58.83
4	80	\$31.78	\$11.49	\$19.53	\$0.00	\$62.80
5	90	\$35.76	\$11.49	\$19.53	\$0.00	\$66.78

Effective Date - 08/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.69	\$11.49	\$19.53	\$0.00	\$51.71
2	60	\$24.82	\$11.49	\$19.53	\$0.00	\$55.84
3	70	\$28.96	\$11.49	\$19.53	\$0.00	\$59.98
4	80	\$33.10	\$11.49	\$19.53	\$0.00	\$64.12
5	90	\$37.23	\$11.49	\$19.53	\$0.00	\$68.25

Notes:

Apprentice to Journeyworker Ratio:1:5

MARBLE MASON/TILE LAYER(SP/PT)SeeBrick
BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE

See "BRICK/STONE/ARTIFICIAL MASONRY(INCL.MASONRY WATERPROOFING)

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
MECH. SWEEPER OPERATOR (ON CONST. SITES) <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/2023	\$38.86	\$13.58	\$15.10	\$0.00	\$67.54
	12/01/2023	\$39.81	\$13.58	\$15.10	\$0.00	\$68.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MECHANIC/WELDER/BOOM TRUCK <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/2023	\$38.33	\$13.58	\$15.10	\$0.00	\$67.01
	12/01/2023	\$39.28	\$13.58	\$15.10	\$0.00	\$67.96
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MILLWRIGHT (Zone 3) <i>MILLWRIGHTS LOCAL 1121 - Zone 3</i>	01/02/2023	\$40.16	\$8.58	\$21.57	\$0.00	\$70.31

Apprentice - MILLWRIGHT - Local 1121 Zone 3

Effective Date - 01/02/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$22.09	\$8.58	\$5.72	\$0.00	\$36.39
2	65	\$26.10	\$8.58	\$17.93	\$0.00	\$52.61
3	75	\$30.12	\$8.58	\$18.98	\$0.00	\$57.68
4	85	\$34.14	\$8.58	\$20.01	\$0.00	\$62.73

Notes: Step 1&2 Appr. indentured after 1/6/2020 receive no pension, but do receive annuity. (Step 1 \$5.72, Step 2 \$6.66)
Steps are 2,000 hours

Apprentice to Journeyworker Ratio:1:4

MORTAR MIXER <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2023	\$33.75	\$9.40	\$16.59	\$0.00	\$59.74
	12/01/2023	\$34.38	\$9.00	\$16.59	\$0.00	\$59.97
For apprentice rates see "Apprentice- LABORER"						
OILER <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/2023	\$34.04	\$13.58	\$15.10	\$0.00	\$62.72
	12/01/2023	\$35.27	\$13.58	\$15.10	\$0.00	\$63.95
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS VI <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/2023	\$32.04	\$13.58	\$15.10	\$0.00	\$60.72
	12/01/2023	\$32.99	\$13.58	\$15.10	\$0.00	\$61.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS) <i>PAINTERS LOCAL 35 - ZONE 3</i>	01/01/2023	\$56.06	\$8.65	\$23.05	\$0.00	\$87.76
	07/01/2023	\$57.26	\$8.65	\$23.05	\$0.00	\$88.96
	01/01/2024	\$58.46	\$8.65	\$23.05	\$0.00	\$90.16
	07/01/2024	\$59.66	\$8.65	\$23.05	\$0.00	\$91.36
	01/01/2025	\$60.86	\$8.65	\$23.05	\$0.00	\$92.56

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.03	\$8.65	\$0.00	\$0.00	\$36.68
2	55	\$30.83	\$8.65	\$6.27	\$0.00	\$45.75
3	60	\$33.64	\$8.65	\$6.84	\$0.00	\$49.13
4	65	\$36.44	\$8.65	\$7.41	\$0.00	\$52.50
5	70	\$39.24	\$8.65	\$19.63	\$0.00	\$67.52
6	75	\$42.05	\$8.65	\$20.20	\$0.00	\$70.90
7	80	\$44.85	\$8.65	\$20.77	\$0.00	\$74.27
8	90	\$50.45	\$8.65	\$21.91	\$0.00	\$81.01

Effective Date - 07/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$28.63	\$8.65	\$0.00	\$0.00	\$37.28
2	55	\$31.49	\$8.65	\$6.27	\$0.00	\$46.41
3	60	\$34.36	\$8.65	\$6.84	\$0.00	\$49.85
4	65	\$37.22	\$8.65	\$7.41	\$0.00	\$53.28
5	70	\$40.08	\$8.65	\$19.63	\$0.00	\$68.36
6	75	\$42.95	\$8.65	\$20.20	\$0.00	\$71.80
7	80	\$45.81	\$8.65	\$20.77	\$0.00	\$75.23
8	90	\$51.53	\$8.65	\$21.91	\$0.00	\$82.09

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	01/01/2023	\$38.93	\$8.65	\$19.15	\$0.00	\$66.73
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 3	07/01/2023	\$39.98	\$8.65	\$19.15	\$0.00	\$67.78
	01/01/2024	\$41.08	\$8.65	\$19.15	\$0.00	\$68.88
	07/01/2024	\$42.13	\$8.65	\$19.15	\$0.00	\$69.93
	01/01/2025	\$43.23	\$8.65	\$19.15	\$0.00	\$71.03

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 Zone 3 - Spray/Sandblast - New

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.47	\$8.65	\$0.00	\$0.00	\$28.12
2	55	\$21.41	\$8.65	\$4.13	\$0.00	\$34.19
3	60	\$23.36	\$8.65	\$4.50	\$0.00	\$36.51
4	65	\$25.30	\$8.65	\$4.88	\$0.00	\$38.83
5	70	\$27.25	\$8.65	\$16.90	\$0.00	\$52.80
6	75	\$29.20	\$8.65	\$17.28	\$0.00	\$55.13
7	80	\$31.14	\$8.65	\$17.65	\$0.00	\$57.44
8	90	\$35.04	\$8.65	\$18.40	\$0.00	\$62.09

Effective Date - 07/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.99	\$8.65	\$0.00	\$0.00	\$28.64
2	55	\$21.99	\$8.65	\$4.13	\$0.00	\$34.77
3	60	\$23.99	\$8.65	\$4.50	\$0.00	\$37.14
4	65	\$25.99	\$8.65	\$4.88	\$0.00	\$39.52
5	70	\$27.99	\$8.65	\$16.90	\$0.00	\$53.54
6	75	\$29.99	\$8.65	\$17.28	\$0.00	\$55.92
7	80	\$31.98	\$8.65	\$17.65	\$0.00	\$58.28
8	90	\$35.98	\$8.65	\$18.40	\$0.00	\$63.03

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT)	01/01/2023	\$36.25	\$8.65	\$19.15	\$0.00	\$64.05
PAINTERS LOCAL 35 - ZONE 3	07/01/2023	\$37.30	\$8.65	\$19.15	\$0.00	\$65.10
	01/01/2024	\$38.40	\$8.65	\$19.15	\$0.00	\$66.20
	07/01/2024	\$39.45	\$8.65	\$19.15	\$0.00	\$67.25
	01/01/2025	\$40.55	\$8.65	\$19.15	\$0.00	\$68.35

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 Zone 3 - Spray/Sandblast - Repaint

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.13	\$8.65	\$0.00	\$0.00	\$26.78
2	55	\$19.94	\$8.65	\$4.13	\$0.00	\$32.72
3	60	\$21.75	\$8.65	\$4.50	\$0.00	\$34.90
4	65	\$23.56	\$8.65	\$4.88	\$0.00	\$37.09
5	70	\$25.38	\$8.65	\$16.90	\$0.00	\$50.93
6	75	\$27.19	\$8.65	\$17.28	\$0.00	\$53.12
7	80	\$29.00	\$8.65	\$17.65	\$0.00	\$55.30
8	90	\$32.63	\$8.65	\$18.40	\$0.00	\$59.68

Effective Date - 07/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.65	\$8.65	\$0.00	\$0.00	\$27.30
2	55	\$20.52	\$8.65	\$4.13	\$0.00	\$33.30
3	60	\$22.38	\$8.65	\$4.50	\$0.00	\$35.53
4	65	\$24.25	\$8.65	\$4.88	\$0.00	\$37.78
5	70	\$26.11	\$8.65	\$16.90	\$0.00	\$51.66
6	75	\$27.98	\$8.65	\$17.28	\$0.00	\$53.91
7	80	\$29.84	\$8.65	\$17.65	\$0.00	\$56.14
8	90	\$33.57	\$8.65	\$18.40	\$0.00	\$60.62

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, NEW) *	01/01/2023	\$37.53	\$8.65	\$19.15	\$0.00	\$65.33
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 3	07/01/2023	\$38.58	\$8.65	\$19.15	\$0.00	\$66.38
	01/01/2024	\$39.68	\$8.65	\$19.15	\$0.00	\$67.48
	07/01/2024	\$40.73	\$8.65	\$19.15	\$0.00	\$68.53
	01/01/2025	\$41.83	\$8.65	\$19.15	\$0.00	\$69.63

Apprentice - PAINTER - Local 35 Zone 3 - BRUSH NEW

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.77	\$8.65	\$0.00	\$0.00	\$27.42
2	55	\$20.64	\$8.65	\$4.13	\$0.00	\$33.42
3	60	\$22.52	\$8.65	\$4.50	\$0.00	\$35.67
4	65	\$24.39	\$8.65	\$4.88	\$0.00	\$37.92
5	70	\$26.27	\$8.65	\$16.90	\$0.00	\$51.82
6	75	\$28.15	\$8.65	\$17.28	\$0.00	\$54.08
7	80	\$30.02	\$8.65	\$17.65	\$0.00	\$56.32
8	90	\$33.78	\$8.65	\$18.40	\$0.00	\$60.83

Effective Date - 07/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.29	\$8.65	\$0.00	\$0.00	\$27.94
2	55	\$21.22	\$8.65	\$4.13	\$0.00	\$34.00
3	60	\$23.15	\$8.65	\$4.50	\$0.00	\$36.30
4	65	\$25.08	\$8.65	\$4.88	\$0.00	\$38.61
5	70	\$27.01	\$8.65	\$16.90	\$0.00	\$52.56
6	75	\$28.94	\$8.65	\$17.28	\$0.00	\$54.87
7	80	\$30.86	\$8.65	\$17.65	\$0.00	\$57.16
8	90	\$34.72	\$8.65	\$18.40	\$0.00	\$61.77

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, REPAINT)	01/01/2023	\$34.85	\$8.65	\$19.15	\$0.00	\$62.65
PAINTERS LOCAL 35 - ZONE 3	07/01/2023	\$35.90	\$8.65	\$19.15	\$0.00	\$63.70
	01/01/2024	\$37.00	\$8.65	\$19.15	\$0.00	\$64.80
	07/01/2024	\$38.05	\$8.65	\$19.15	\$0.00	\$65.85
	01/01/2025	\$39.15	\$8.65	\$19.15	\$0.00	\$66.95

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 Zone 3 - BRUSH REPAINT

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.43	\$8.65	\$0.00	\$0.00	\$26.08
2	55	\$19.17	\$8.65	\$4.13	\$0.00	\$31.95
3	60	\$20.91	\$8.65	\$4.50	\$0.00	\$34.06
4	65	\$22.65	\$8.65	\$4.88	\$0.00	\$36.18
5	70	\$24.40	\$8.65	\$16.90	\$0.00	\$49.95
6	75	\$26.14	\$8.65	\$17.28	\$0.00	\$52.07
7	80	\$27.88	\$8.65	\$17.65	\$0.00	\$54.18
8	90	\$31.37	\$8.65	\$18.40	\$0.00	\$58.42

Effective Date - 07/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.95	\$8.65	\$0.00	\$0.00	\$26.60
2	55	\$19.75	\$8.65	\$4.13	\$0.00	\$32.53
3	60	\$21.54	\$8.65	\$4.50	\$0.00	\$34.69
4	65	\$23.34	\$8.65	\$4.88	\$0.00	\$36.87
5	70	\$25.13	\$8.65	\$16.90	\$0.00	\$50.68
6	75	\$26.93	\$8.65	\$17.28	\$0.00	\$52.86
7	80	\$28.72	\$8.65	\$17.65	\$0.00	\$55.02
8	90	\$32.31	\$8.65	\$18.40	\$0.00	\$59.36

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY)	06/01/2023	\$33.50	\$9.40	\$14.53	\$0.00	\$57.43
LABORERS - ZONE 3 (HEAVY & HIGHWAY)	12/01/2023	\$34.13	\$9.40	\$14.53	\$0.00	\$58.06
	06/01/2024	\$35.33	\$9.40	\$14.53	\$0.00	\$59.26
	12/01/2024	\$36.53	\$9.40	\$14.53	\$0.00	\$60.46
	06/01/2025	\$37.78	\$9.40	\$14.53	\$0.00	\$61.71
	12/01/2025	\$39.02	\$9.40	\$14.53	\$0.00	\$62.95
	06/01/2026	\$40.32	\$9.40	\$14.53	\$0.00	\$64.25
	12/01/2026	\$41.61	\$9.40	\$14.53	\$0.00	\$65.54

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

PANEL & PICKUP TRUCKS DRIVER	12/01/2021	\$35.78	\$13.41	\$16.01	\$0.00	\$65.20
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B						
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK)	08/01/2020	\$43.53	\$9.40	\$23.12	\$0.00	\$76.05
PILE DRIVER LOCAL 56 (ZONE 3)						
For apprentice rates see "Apprentice- PILE DRIVER"						
PILE DRIVER	08/01/2020	\$43.53	\$9.40	\$23.12	\$0.00	\$76.05
PILE DRIVER LOCAL 56 (ZONE 3)						

Apprentice - PILE DRIVER - Local 56 Zone 3

Effective Date - 08/01/2020

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Notes: Apprentice wages shall be no less than the following Steps;
 (Same as set in Zone 1)
 1\$57.06/2\$61.96/3\$66.87/4\$69.32/5\$71.78/6\$71.78/7\$76.68/8\$76.68

Apprentice to Journeyworker Ratio:1:5

PIPELAYER <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2023	\$33.75	\$9.40	\$16.59	\$0.00	\$59.74
	12/01/2023	\$34.38	\$9.00	\$16.59	\$0.00	\$59.97

For apprentice rates see "Apprentice- LABORER"

PIPELAYER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	06/01/2023	\$33.75	\$9.40	\$14.53	\$0.00	\$57.68
	12/01/2023	\$34.38	\$9.40	\$14.53	\$0.00	\$58.31
	06/01/2024	\$35.58	\$9.40	\$14.53	\$0.00	\$59.51
	12/01/2024	\$36.78	\$9.40	\$14.53	\$0.00	\$60.71
	06/01/2025	\$38.03	\$9.40	\$14.53	\$0.00	\$61.96
	12/01/2025	\$39.27	\$9.40	\$14.53	\$0.00	\$63.20
	06/01/2026	\$40.57	\$9.40	\$14.53	\$0.00	\$64.50
	12/01/2026	\$41.86	\$9.40	\$14.53	\$0.00	\$65.79

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

PLUMBER & PIPEFITTER <i>PLUMBERS & PIPEFITTERS LOCAL 104</i>	03/17/2023	\$46.96	\$9.55	\$17.10	\$0.00	\$73.61
	09/17/2023	\$47.96	\$9.55	\$17.10	\$0.00	\$74.61
	03/17/2024	\$49.21	\$9.55	\$17.10	\$0.00	\$75.86

Apprentice - PLUMBER/PIPEFITTER - Local 104

Effective Date - 03/17/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$21.13	\$9.55	\$10.10	\$0.00	\$40.78
2	50	\$23.48	\$9.55	\$10.10	\$0.00	\$43.13
3	55	\$25.83	\$9.55	\$10.10	\$0.00	\$45.48
4	60	\$28.18	\$9.55	\$10.10	\$0.00	\$47.83
5	65	\$30.52	\$9.55	\$10.10	\$0.00	\$50.17
6	70	\$32.87	\$9.55	\$10.10	\$0.00	\$52.52
7	75	\$35.22	\$9.55	\$10.10	\$0.00	\$54.87
8	80	\$37.57	\$9.55	\$10.10	\$0.00	\$57.22
9	80	\$37.57	\$9.55	\$17.10	\$0.00	\$64.22
10	80	\$37.57	\$9.55	\$17.10	\$0.00	\$64.22

Notes: **1:1,2:5,3:9,4:12

Apprentice to Journeyworker Ratio:**

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PNEUMATIC CONTROLS (TEMP.) <i>PLUMBERS & PIPEFITTERS LOCAL 104</i>	03/17/2023	\$46.96	\$9.55	\$17.10	\$0.00	\$73.61
	09/17/2023	\$47.96	\$9.55	\$17.10	\$0.00	\$74.61
	03/17/2024	\$49.21	\$9.55	\$17.10	\$0.00	\$75.86
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	06/01/2023	\$33.75	\$9.40	\$14.53	\$0.00	\$57.68
	12/01/2023	\$34.38	\$9.40	\$14.53	\$0.00	\$58.31
	06/01/2024	\$35.58	\$9.40	\$14.53	\$0.00	\$59.51
	12/01/2024	\$36.78	\$9.40	\$14.53	\$0.00	\$60.71
	06/01/2025	\$38.03	\$9.40	\$14.53	\$0.00	\$61.96
	12/01/2025	\$39.27	\$9.40	\$14.53	\$0.00	\$63.20
	06/01/2026	\$40.57	\$9.40	\$14.53	\$0.00	\$64.50
12/01/2026	\$41.86	\$9.40	\$14.53	\$0.00	\$65.79	
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
POWDERMAN & BLASTER <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2023	\$34.50	\$9.40	\$16.59	\$0.00	\$60.49
	12/01/2023	\$35.13	\$9.40	\$16.59	\$0.00	\$61.12
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	06/01/2023	\$34.50	\$9.40	\$14.53	\$0.00	\$58.43
	12/01/2023	\$35.13	\$9.40	\$14.53	\$0.00	\$59.06
	06/01/2024	\$36.33	\$9.40	\$14.53	\$0.00	\$60.26
	12/01/2024	\$37.53	\$9.40	\$14.53	\$0.00	\$61.46
	06/01/2025	\$38.78	\$9.40	\$14.53	\$0.00	\$62.71
	12/01/2025	\$40.02	\$9.40	\$14.53	\$0.00	\$63.95
	06/01/2026	\$41.32	\$9.40	\$14.53	\$0.00	\$65.25
12/01/2026	\$42.61	\$9.40	\$14.53	\$0.00	\$66.54	
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/2023	\$38.86	\$13.58	\$15.10	\$0.00	\$67.54
	12/01/2023	\$39.81	\$13.58	\$15.10	\$0.00	\$68.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/2023	\$38.33	\$13.58	\$15.10	\$0.00	\$67.01
	12/01/2023	\$39.28	\$13.58	\$15.10	\$0.00	\$67.96
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER <i>TEAMSTERS 404 - Construction Service (Northampton)</i>	05/01/2020	\$22.44	\$11.07	\$6.50	\$0.00	\$40.01
RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2023	\$33.75	\$9.40	\$16.59	\$0.00	\$59.74
	12/01/2023	\$34.38	\$9.00	\$16.59	\$0.00	\$59.97
For apprentice rates see "Apprentice- LABORER"						
ROLLER OPERATOR <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/2023	\$37.72	\$13.58	\$15.10	\$0.00	\$66.40
	12/01/2023	\$38.67	\$13.58	\$15.10	\$0.00	\$67.35
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
ROOFER (Coal tar pitch) <i>ROOFERS LOCAL 248</i>	07/01/2022	\$38.16	\$10.35	\$17.25	\$0.00	\$65.76
	07/01/2023	\$38.66	\$10.35	\$18.75	\$0.00	\$67.76
For apprentice rates see "Apprentice- ROOFER"						
ROOFER (Inc.Roofing Waterproofing &Roofing Damproofing) <i>ROOFERS LOCAL 248</i>	07/01/2022	\$37.66	\$10.35	\$16.75	\$0.00	\$64.76
	07/01/2023	\$39.16	\$10.35	\$18.25	\$0.00	\$67.76

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ROOFER - Local 248

Effective Date - 07/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$22.60	\$10.35	\$0.00	\$0.00	\$32.95
2	65	\$24.48	\$10.35	\$16.75	\$0.00	\$51.58
3	70	\$26.36	\$10.35	\$16.75	\$0.00	\$53.46
4	75	\$28.25	\$10.35	\$16.75	\$0.00	\$55.35
5	80	\$30.13	\$10.35	\$16.75	\$0.00	\$57.23
6	85	\$32.01	\$10.35	\$16.75	\$0.00	\$59.11
7	90	\$33.89	\$10.35	\$16.75	\$0.00	\$60.99
8	95	\$35.78	\$10.35	\$16.75	\$0.00	\$62.88

Effective Date - 07/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$23.50	\$10.35	\$0.00	\$0.00	\$33.85
2	65	\$25.45	\$10.35	\$18.25	\$0.00	\$54.05
3	70	\$27.41	\$10.35	\$18.25	\$0.00	\$56.01
4	75	\$29.37	\$10.35	\$18.25	\$0.00	\$57.97
5	80	\$31.33	\$10.35	\$18.25	\$0.00	\$59.93
6	85	\$33.29	\$10.35	\$18.25	\$0.00	\$61.89
7	90	\$35.24	\$10.35	\$18.25	\$0.00	\$63.84
8	95	\$37.20	\$10.35	\$18.25	\$0.00	\$65.80

Notes:
Steps are 750 hrs.Roofer(Tear Off)1:1; Same as above

Apprentice to Journeyworker Ratio:1:3

ROOFER SLATE / TILE / PRECAST CONCRETE <i>ROOFERS LOCAL 248</i>	07/01/2022	\$38.16	\$10.35	\$17.25	\$0.00	\$65.76
	07/01/2023	\$38.66	\$10.35	\$18.75	\$0.00	\$67.76
For apprentice rates see "Apprentice- ROOFER"						
SCRAPER <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/2023	\$38.33	\$13.58	\$15.10	\$0.00	\$67.01
	12/01/2023	\$39.28	\$13.58	\$15.10	\$0.00	\$67.96
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
SELF-POWERED ROLLERS AND COMPACTORS (TAMPERS) <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/2023	\$37.72	\$13.58	\$15.10	\$0.00	\$66.40
	12/01/2023	\$38.67	\$13.58	\$15.10	\$0.00	\$67.35
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
SELF-PROPELLED POWER BROOM <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/2023	\$35.10	\$13.58	\$15.10	\$0.00	\$63.78
	12/01/2023	\$36.05	\$13.58	\$15.10	\$0.00	\$64.73
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
SHEETMETAL WORKER <i>SHEETMETAL WORKERS LOCAL 63</i>	01/01/2023	\$41.30	\$10.64	\$17.54	\$2.05	\$71.53
	07/01/2023	\$42.55	\$10.64	\$17.54	\$2.05	\$72.78
	01/01/2024	\$43.80	\$10.64	\$17.54	\$2.05	\$74.03
	07/01/2024	\$45.05	\$10.64	\$17.54	\$2.05	\$75.28
	01/01/2025	\$46.30	\$10.64	\$17.54	\$2.05	\$76.53

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - SHEET METAL WORKER - Local 63

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$18.59	\$4.79	\$4.76	\$0.92	\$29.06
2	50	\$20.65	\$5.32	\$5.29	\$1.03	\$32.29
3	55	\$22.72	\$5.85	\$5.82	\$1.13	\$35.52
4	60	\$24.78	\$6.38	\$6.35	\$1.23	\$38.74
5	65	\$26.85	\$6.92	\$6.88	\$1.33	\$41.98
6	70	\$28.91	\$7.45	\$7.41	\$1.44	\$45.21
7	75	\$30.98	\$7.98	\$7.94	\$1.54	\$48.44
8	80	\$33.04	\$8.51	\$15.42	\$1.64	\$58.61
9	85	\$35.11	\$9.04	\$15.95	\$1.74	\$61.84
10	90	\$37.17	\$9.58	\$16.48	\$1.85	\$65.08

Effective Date - 07/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$19.15	\$4.79	\$4.76	\$0.92	\$29.62
2	50	\$21.28	\$5.32	\$5.29	\$1.03	\$32.92
3	55	\$23.40	\$5.85	\$5.82	\$1.13	\$36.20
4	60	\$25.53	\$6.38	\$6.35	\$1.23	\$39.49
5	65	\$27.66	\$6.92	\$6.88	\$1.33	\$42.79
6	70	\$29.79	\$7.45	\$7.41	\$1.44	\$46.09
7	75	\$31.91	\$7.98	\$7.94	\$1.54	\$49.37
8	80	\$34.04	\$8.51	\$15.42	\$1.64	\$59.61
9	85	\$36.17	\$9.04	\$15.95	\$1.74	\$62.90
10	90	\$38.30	\$9.58	\$16.48	\$1.85	\$66.21

Notes:

Apprentice to Journeyworker Ratio:1:3

SPECIALIZED EARTH MOVING EQUIP < 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.24	\$13.41	\$16.01	\$0.00	\$65.66
SPECIALIZED EARTH MOVING EQUIP > 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.53	\$13.41	\$16.01	\$0.00	\$65.95
SPRINKLER FITTER <i>SPRINKLER FITTERS LOCAL 669</i>	04/01/2021	\$43.14	\$10.55	\$16.41	\$0.00	\$70.10

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - SPRINKLER FITTER - Local 669

Effective Date - 04/01/2021

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$19.41	\$7.75	\$0.00	\$0.00	\$27.16
2	50	\$21.57	\$7.75	\$0.00	\$0.00	\$29.32
3	55	\$23.73	\$10.55	\$8.15	\$0.00	\$42.43
4	60	\$25.88	\$10.55	\$8.15	\$0.00	\$44.58
5	65	\$28.04	\$10.55	\$8.40	\$0.00	\$46.99
6	70	\$30.20	\$10.55	\$8.40	\$0.00	\$49.15
7	75	\$32.36	\$10.55	\$8.40	\$0.00	\$51.31
8	80	\$34.51	\$10.55	\$8.40	\$0.00	\$53.46
9	85	\$36.67	\$10.55	\$8.40	\$0.00	\$55.62
10	90	\$38.83	\$10.55	\$8.40	\$0.00	\$57.78

Notes:

Apprentice to Journeyworker Ratio:1:1

TELECOMMUNICATION TECHNICIAN <i>ELECTRICIANS LOCAL 7</i>	01/01/2023	\$47.01	\$12.50	\$13.96	\$0.00	\$73.47
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Apprentice - TELECOMMUNICATION TECHNICIAN - Local 7

Effective Date - 01/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$18.80	\$7.35	\$0.56	\$0.00	\$26.71
2	45	\$21.15	\$7.35	\$0.63	\$0.00	\$29.13
3	50	\$23.51	\$12.25	\$7.20	\$0.00	\$42.96
4	55	\$25.86	\$12.25	\$7.27	\$0.00	\$45.38
5	65	\$30.56	\$12.25	\$9.14	\$0.00	\$51.95
6	70	\$32.91	\$12.25	\$10.37	\$0.00	\$55.53

Notes:
Steps are 800 hours

Apprentice to Journeyworker Ratio:1:1

TERRAZZO FINISHERS <i>BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE</i>	02/01/2023	\$59.29	\$11.49	\$22.34	\$0.00	\$93.12
	08/01/2023	\$61.34	\$11.49	\$22.34	\$0.00	\$95.17
	02/01/2024	\$62.59	\$11.49	\$22.34	\$0.00	\$96.42
	08/01/2024	\$64.69	\$11.49	\$22.34	\$0.00	\$98.52
	02/01/2025	\$65.99	\$11.49	\$22.34	\$0.00	\$99.82
	08/01/2025	\$68.14	\$11.49	\$22.34	\$0.00	\$101.97
	02/10/2026	\$69.49	\$11.49	\$22.34	\$0.00	\$103.32
	08/01/2026	\$71.69	\$11.49	\$22.34	\$0.00	\$105.52
	02/01/2027	\$73.09	\$11.49	\$22.34	\$0.00	\$106.92

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - TERRAZZO FINISHER-Local 3 Marble/Tile (Spr/Ptt)

Effective Date - 02/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$29.65	\$11.49	\$22.34	\$0.00	\$63.48
2	60	\$35.57	\$11.49	\$22.34	\$0.00	\$69.40
3	70	\$41.50	\$11.49	\$22.34	\$0.00	\$75.33
4	80	\$47.43	\$11.49	\$22.34	\$0.00	\$81.26
5	90	\$53.36	\$11.49	\$22.34	\$0.00	\$87.19

Effective Date - 08/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$30.67	\$11.49	\$22.34	\$0.00	\$64.50
2	60	\$36.80	\$11.49	\$22.34	\$0.00	\$70.63
3	70	\$42.94	\$11.49	\$22.34	\$0.00	\$76.77
4	80	\$49.07	\$11.49	\$22.34	\$0.00	\$82.90
5	90	\$55.21	\$11.49	\$22.34	\$0.00	\$89.04

Notes:

Apprentice to Journeyworker Ratio:1:5

TERRAZZO MECHANIC	02/01/2023	\$60.37	\$11.49	\$22.31	\$0.00	\$94.17
BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE	08/01/2023	\$62.42	\$11.49	\$22.31	\$0.00	\$96.22
	02/01/2024	\$63.67	\$11.49	\$22.31	\$0.00	\$97.47
	08/01/2024	\$65.77	\$11.49	\$22.31	\$0.00	\$99.57
	02/01/2025	\$67.07	\$11.49	\$22.31	\$0.00	\$100.87
	08/01/2025	\$69.22	\$11.49	\$22.31	\$0.00	\$103.02
	02/01/2026	\$70.57	\$11.49	\$22.31	\$0.00	\$104.37
	08/01/2026	\$72.77	\$11.49	\$22.31	\$0.00	\$106.57
	02/01/2027	\$74.17	\$11.49	\$22.31	\$0.00	\$107.97

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - TERRAZZO MECH - Local 3 Marble/Tile (Spr/Pitt)

Effective Date - 02/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$30.19	\$11.49	\$22.31	\$0.00	\$63.99
2	60	\$36.22	\$11.49	\$22.31	\$0.00	\$70.02
3	70	\$42.26	\$11.49	\$22.31	\$0.00	\$76.06
4	80	\$48.30	\$11.49	\$22.31	\$0.00	\$82.10
5	90	\$54.33	\$11.49	\$22.31	\$0.00	\$88.13

Effective Date - 08/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$31.21	\$11.49	\$22.31	\$0.00	\$65.01
2	60	\$37.45	\$11.49	\$22.31	\$0.00	\$71.25
3	70	\$43.69	\$11.49	\$22.31	\$0.00	\$77.49
4	80	\$49.94	\$11.49	\$22.31	\$0.00	\$83.74
5	90	\$56.18	\$11.49	\$22.31	\$0.00	\$89.98

Notes:

Apprentice to Journeyworker Ratio:1:5

TEST BORING DRILLER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2023	\$47.58	\$9.40	\$17.97	\$0.00	\$74.95
	12/01/2023	\$48.83	\$9.40	\$17.97	\$0.00	\$76.20
	06/01/2024	\$50.31	\$9.40	\$17.97	\$0.00	\$77.68
	12/01/2024	\$51.78	\$9.40	\$17.97	\$0.00	\$79.15
	06/01/2025	\$53.28	\$9.40	\$17.97	\$0.00	\$80.65
	12/01/2025	\$54.78	\$9.40	\$17.97	\$0.00	\$82.15
	06/01/2026	\$56.33	\$9.40	\$17.97	\$0.00	\$83.70
	12/01/2026	\$57.83	\$9.40	\$17.97	\$0.00	\$85.20

For apprentice rates see "Apprentice- LABORER"

TEST BORING DRILLER HELPER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2023	\$43.70	\$9.40	\$17.97	\$0.00	\$71.07
	12/01/2023	\$44.95	\$9.40	\$17.97	\$0.00	\$72.32
	06/01/2024	\$46.43	\$9.40	\$17.97	\$0.00	\$73.80
	12/01/2024	\$47.90	\$9.40	\$17.97	\$0.00	\$75.27
	06/01/2025	\$49.40	\$9.40	\$17.97	\$0.00	\$76.77
	12/01/2025	\$50.90	\$9.40	\$17.97	\$0.00	\$78.27
	06/01/2026	\$52.45	\$9.40	\$17.97	\$0.00	\$79.82
	12/01/2026	\$53.95	\$9.40	\$17.97	\$0.00	\$81.32

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2023	\$43.58	\$9.40	\$17.97	\$0.00	\$70.95
	12/01/2023	\$44.83	\$9.40	\$17.97	\$0.00	\$72.20
	06/01/2024	\$46.31	\$9.40	\$17.97	\$0.00	\$73.68
	12/01/2024	\$47.78	\$9.40	\$17.97	\$0.00	\$75.15
	06/01/2025	\$49.28	\$9.40	\$17.97	\$0.00	\$76.65
	12/01/2025	\$50.78	\$9.40	\$17.97	\$0.00	\$78.15
	06/01/2026	\$52.33	\$9.40	\$17.97	\$0.00	\$79.70
	12/01/2026	\$53.83	\$9.40	\$17.97	\$0.00	\$81.20
For apprentice rates see "Apprentice- LABORER"						
TRACTORS <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/2023	\$37.72	\$13.58	\$15.10	\$0.00	\$66.40
	12/01/2023	\$38.67	\$13.58	\$15.10	\$0.00	\$67.35
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.82	\$13.41	\$16.01	\$0.00	\$66.24
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	06/01/2023	\$55.81	\$9.40	\$18.42	\$0.00	\$83.63
	12/01/2023	\$57.06	\$9.40	\$18.42	\$0.00	\$84.88
	06/01/2024	\$58.54	\$9.40	\$18.42	\$0.00	\$86.36
	12/01/2024	\$60.01	\$9.40	\$18.42	\$0.00	\$87.83
	06/01/2025	\$61.51	\$9.40	\$18.42	\$0.00	\$89.33
	12/01/2025	\$63.01	\$9.40	\$18.42	\$0.00	\$90.83
	06/01/2026	\$64.56	\$9.40	\$18.42	\$0.00	\$92.38
	12/01/2026	\$66.06	\$9.40	\$18.42	\$0.00	\$93.88
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	06/01/2023	\$57.81	\$9.40	\$18.42	\$0.00	\$85.63
	12/01/2023	\$59.06	\$9.40	\$18.42	\$0.00	\$86.88
	06/01/2024	\$60.54	\$9.40	\$18.42	\$0.00	\$88.36
	12/01/2024	\$62.01	\$9.40	\$18.42	\$0.00	\$89.83
	06/01/2025	\$63.51	\$9.40	\$18.42	\$0.00	\$91.33
	12/01/2025	\$65.01	\$9.40	\$18.42	\$0.00	\$92.83
	06/01/2026	\$66.56	\$9.40	\$18.42	\$0.00	\$94.38
	12/01/2026	\$68.06	\$9.40	\$18.42	\$0.00	\$95.88
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2023	\$47.88	\$9.40	\$18.42	\$0.00	\$75.70
	12/01/2023	\$49.13	\$9.40	\$18.42	\$0.00	\$76.95
	06/01/2024	\$50.61	\$9.40	\$18.42	\$0.00	\$78.43
	12/01/2024	\$52.08	\$9.40	\$18.42	\$0.00	\$79.90
	06/01/2025	\$53.58	\$9.40	\$18.42	\$0.00	\$81.40
	12/01/2025	\$55.08	\$9.40	\$18.42	\$0.00	\$82.90
	06/01/2026	\$56.63	\$9.40	\$18.42	\$0.00	\$84.45
	12/01/2026	\$58.13	\$9.40	\$18.42	\$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>	06/01/2023	\$49.88	\$9.40	\$18.42	\$0.00	\$77.70
	12/01/2023	\$51.13	\$9.40	\$18.42	\$0.00	\$78.95
	06/01/2024	\$52.61	\$9.40	\$18.42	\$0.00	\$80.43
	12/01/2024	\$54.08	\$9.40	\$18.42	\$0.00	\$81.90
	06/01/2025	\$55.58	\$9.40	\$18.42	\$0.00	\$83.40
	12/01/2025	\$57.08	\$9.40	\$18.42	\$0.00	\$84.90
	06/01/2026	\$58.63	\$9.40	\$18.42	\$0.00	\$86.45
	12/01/2026	\$60.13	\$9.40	\$18.42	\$0.00	\$87.95
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.24	\$13.41	\$16.01	\$0.00	\$65.66
WAGON DRILL OPERATOR <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2023	\$33.75	\$9.40	\$16.59	\$0.00	\$59.74
	12/01/2023	\$34.38	\$9.40	\$16.59	\$0.00	\$60.37
For apprentice rates see "Apprentice- LABORER"						
WAGON DRILL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	06/01/2023	\$33.75	\$9.40	\$14.53	\$0.00	\$57.68
	12/01/2023	\$34.38	\$9.40	\$14.53	\$0.00	\$58.31
	06/01/2024	\$35.58	\$9.40	\$14.53	\$0.00	\$59.51
	12/01/2024	\$36.78	\$9.40	\$14.53	\$0.00	\$60.71
	06/01/2025	\$38.03	\$9.40	\$14.53	\$0.00	\$61.96
	12/01/2025	\$39.27	\$9.40	\$14.53	\$0.00	\$63.20
	06/01/2026	\$40.57	\$9.40	\$14.53	\$0.00	\$64.50
	12/01/2026	\$41.86	\$9.40	\$14.53	\$0.00	\$65.79
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
WATER METER INSTALLER <i>PLUMBERS & PIPEFITTERS LOCAL 104</i>	03/17/2023	\$46.96	\$9.55	\$17.10	\$0.00	\$73.61
	09/17/2023	\$47.96	\$9.55	\$17.10	\$0.00	\$74.61
	03/17/2024	\$49.21	\$9.55	\$17.10	\$0.00	\$75.86
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.

"General Decision Number: MA20230010 03/31/2023

Superseded General Decision Number: MA20220010

State: Massachusetts

Construction Types: Heavy (Heavy and Marine)

Counties: Berkshire, Franklin, Hampden and Hampshire Counties in Massachusetts.

HEAVY CONSTRUCTION PROJECTS; AND MARINE CONSTRUCTION PROJECTS

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

<p>If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:</p>	<p>. Executive Order 14026 generally applies to the contract.</p> <p>. The contractor must pay all covered workers at least \$16.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2023.</p>
<p>If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:</p>	<p>. Executive Order 13658 generally applies to the contract.</p> <p>. The contractor must pay all covered workers at least \$12.15 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2023.</p>

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number Publication Date
 0 01/06/2023

- 1 01/27/2023
- 2 02/03/2023
- 3 03/03/2023
- 4 03/24/2023
- 5 03/31/2023

BOIL0029-001 01/01/2021

	Rates	Fringes
BOILERMAKER.....	\$ 45.87	29.02

BRMA0001-005 02/01/2023

SPRINGFIELD CHAPTER

	Rates	Fringes
BRICKLAYER		
BRICKLAYERS; CEMENT		
MASONS; PLASTERERS; STONE		
MASONS; MARBLE, TILE &		
TERRAZZO WORKERS.....	\$ 48.76	32.27
BRICKLAYERS; CEMENT		
MASONS; STONE MASONS;		
MARBLE, TILE & TERRAZO.....	\$ 41.96	29.80

BRMA0001-007 02/01/2023

SPRINGFIELD/PITTSFIELD CHAPTER
BERKSHIRE COUNTY

	Rates	Fringes
BRICKLAYER		
BRICKLAYERS; CEMENT		
MASONS; PLASTERERS; STONE		
MASONS; MARBLE, TILE &		
TERRAZZO WORKERS.....	\$ 48.76	32.27

CARP0056-004 08/01/2022

	Rates	Fringes
DIVER TENDER.....	\$ 52.15	34.10
DIVER.....	\$ 68.70	35.57

CARP0056-009 08/01/2020

	Rates	Fringes
PILEDRIVERMAN.....	\$ 49.07	35.57

CARP0336-005 03/01/2023

FRANKLIN COUNTY (Erving, Orange, North Orange, and Warwick)

	Rates	Fringes
CARPENTER.....	\$ 39.76	25.86

CARP0336-010 03/01/2023

BERKSHIRE

	Rates	Fringes
CARPENTER.....	\$ 39.72	25.86

CARP0336-012 03/01/2023		

HAMPDEN; HAMPSHIRE; AND FRANKLIN (Remainder of County)

	Rates	Fringes
CARPENTER.....	\$ 39.76	25.86

CARP1121-004 01/02/2023		

	Rates	Fringes
MILLWRIGHT.....	\$ 39.18	31.18

ELEC0007-002 01/01/2023		

HAMPDEN (Except Chester & Holyoke); HAMPSHIRE (Belchertown, Ware)

	Rates	Fringes
ELECTRICIAN.....	\$ 47.01	27.21

ELEC0007-003 01/01/2023		

BERKSHIRE; FRANKLIN; HAMPDEN (Chester, Holyoke); HAMPSHIRE (Except Belchertown, Ware)

	Rates	Fringes
ELECTRICIAN.....	\$ 47.41	27.21

ENGI0098-007 12/01/2016		

	Rates	Fringes
Power equipment operators:		
Group 1.....	\$ 33.68	23.96+A
Group 2.....	\$ 33.37	23.96+A
Group 3.....	\$ 33.15	23.96+A
Group 4.....	\$ 32.54	23.96+A
Group 5.....	\$ 29.92	23.96+A
Group 6.....	\$ 28.80	23.96+A
Group 7.....	\$ 26.86	23.96+A
Group 8.....	\$ 305.95	23.96+A
Group 9.....	\$ 230.69	23.96+A
Group 10.....	\$ 35.17	23.96+A
Group 11.....	\$ 38.18	23.96+A
Group 12.....	\$ 39.68	23.96+A
Group 13.....	\$ 40.68	23.96+A
Group 14.....	\$ 41.68	23.96+A
Group 15.....	\$ 43.18	23.96+A

HAZARDOUS WASTE PREMIUM \$2.00

FOOTNOTE FOR POWER EQUIPMENT OPERATORS:

Group 8 and Group 9 are per day wages.

A. Paid Holidays: New year's Day, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Columbus Day,

Veterans Day, Thanksgiving Day and Christmas Day

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

Group 1: Shovels; crawlers and truck cranes including all tower; self-propelled hydraulic cranes 10 tons and over; draglines; clam shells; cableways; shaft hoists; mucking machines derricks; backhoes; bulldozers; gradalls; elevating graders; pile drivers; concrete pavers; trenching machines; front end loaders- 5 1/2 cu yds and over; dual drum paver; automatic grader-excavator(C.M.I. or equal); scrapers towing pan or wagon; tandem dozers or push cats(2 units in tandem); shotcrete machine; tunnel boring machine; combination backhoe/loader 3/4 cu yd hoe or over; jet engine dryer; tree shredder; post hole digger; post hole hammer; post extractor; truck mounted concrete pump with boom; roto-mill; Grader; Horizontal Drilling Machine; John Henry Rock Drill and similar equipment.

Group 2: Rotary drill with mounted compressor; compressor house (3 to 6 compressors); rock and earth boring machines (excluding McCarthy and similar drills); front end loaders 4 cu yds to 5 1/2 cu yds); forklifts-7 ft lift and over 3 ton capacity; scraper 21 yds and over (struck load); sonic hammer console; reclaimers road planer/milling machine; cal tracks; ballast regulators; rail anchor machines; switch tampers, asphalt pavers; mechanic; welder and transfer machine.

Group 3: Combination backhoe/loader up to 3/4 cu yd; scrapers up to 21 cu yd (struck load, self propelled or tractor drawn); tireman; front end loaders up to 4 yds; well drillers; engineer or fireman on high pressure boiler; self-loading batch plant; well point operators electric pumps used in well point system; pumps, 16 inches and over (total discharge); compressor, one or two 900 cu ft and over; powered grease truck; tunnel locomotives and dingys; grout pumps; hydraulic jacks; boom truck; hydraulic cranes- up to 10 ton.

Group 4: Asphalt rollers; self-powered rollers and compactors; tractor without blade drawing sheepsfoot roller; rubber tire roller; vibratory roller or other type of compactors including machines for pulverizing and aerating soil; york rake.

Group 5: Hoists; conveyors; power pavement breakers; self-powered concrete pavement finishing machines; two bag mixers with skip; McCarthy and similar drills; batch plants (not self loading); bulk cement plants; self-propelled material spreaders; three or more 10 KW light plants; 30 KW or more generators; power broom.

Group 6: Compressor (one or two) 315 cu ft to 900 cu ft; pumps 4 inches to 16 inches (total discharge).

Group 7: Compressors up to 315 cu ft; small mixers with skip; pumps up to 4 inches; power heaters; oiler; A-frame trucks; forklifts-up to 7 ft. lift and up to 3 ton capacity; hydro broom; stud welder.

Group 8: Truck crane crews

Group 9: Oiler

Group 10: Master Mechanic

Group 11: Boom lengths over 150 feet including jib

Group 12: Boom lengths over 200 feet including jib

Group 13: Boom lengths over 250 feet including jib

Group 14: Boom lengths over 300 feet including jib

Group 15: Boom lengths over 350 feet including jib

* IRON0007-014 03/16/2023

BERKSHIRE (Becket, East Otis, Hinsdale, Monterey, New Marlboro, North Otis, Otis, Peru, Sandisfield, Savoy, Sheffield, Washington, Windsor); FRANKLIN; HAMPDEN; HAMPSHIRE

	Rates	Fringes
IRONWORKER.....	\$ 38.55	32.32

IRON0012-003 07/01/2022

BERKSHIRE (Lee)

	Rates	Fringes
IRONWORKER.....	\$ 33.50	26.53

IRON0012-004 07/01/2022

BERKSHIRE (Remainder of County)

	Rates	Fringes
Ironworkers:		
Sheeter.....	\$ 33.50	26.53
Structural, Ornamental, Reinforcing, Fence Erector, Machinery Mover, Rigger, Rodman, Stone Derrickman.....	\$ 33.50	26.53

LAB0022-002 12/01/2021

FRANKLIN (Orange, Warwick)

	Rates	Fringes
Laborers:		
GROUP 1.....	\$ 35.41	26.59
GROUP 2.....	\$ 35.66	26.59
GROUP 3.....	\$ 36.16	26.59
GROUP 4.....	\$ 36.41	26.59
GROUP 5.....	\$ 36.16	26.59
GROUP 6.....	\$ 37.41	26.59

LABORERS CLASSIFICATIONS

GROUP 1: Laborers; carpenter tenders; cement finisher tenders, plasterer tenders

GROUP 2: Asphalt raker; fence and guard rail erector; laser beam operator; mason tender; pipelayer; pneumatic drill operator; pneumatic tool operator; wagon drill operator; jackhammer operator, pavement breaker, carbide core drilling machine, chain saw operator, barco type jumping tampers, concrete pump, motorized mortar miner, ride-on motorized buggy

GROUP 3: Air track operator; block paver; rammer; curb setter, hydraulic and similar self-powered drills

GROUP 4: Blaster; powderman

GROUP 5: Precast floor and roof, plank erector

GROUP 6: Asbestos Abatement, Toxic and Hazardous waste laborers

LAB00473-005 12/01/2021

FRANKLIN (Except Orange and Warrick); HAMPDEN and HAMPSHIRE COUNTIES (with the exception of Chesterfield, Cummington, Goshen, Middlefield, Plainfield, and Worthington)

	Rates	Fringes
Laborers:		
Group 1.....	\$ 30.37	24.64
Group 2.....	\$ 30.62	24.64
Group 3.....	\$ 31.12	24.64
Group 4.....	\$ 31.37	24.64
Group 5.....	\$ 24.50	24.64
Group 6.....	\$ 32.37	24.64

LABORERS CLASSIFICATIONS

Group 1: Carpenter tenders, cement finisher tenders, laborers, wrecking laborers

Group 2: Asphalt rakers, fence and guard rail erectors, laser beam operator, mason tender, pipelayer, pneumatic drill operator, pneumatic tool operator, wagon drill operator

Group 3: Air track operator, block pavers, rammers, curb setters

Group 4: Blasters, powdermen

Group 5: Flaggers

Group 6: Asbestos abatement, toxic and Hazardous waste laborers

LAB00473-006 12/01/2021

BERKSHIRE; HAMPSHIRE COUNTIES (the towns of Chesterfield, Cummington, Goshen, Middlefield, Plainfield, and Worthington only)

	Rates	Fringes
Laborers:		
Group 1.....	\$ 30.37	24.49
Group 2.....	\$ 30.62	24.49
Group 3.....	\$ 31.12	24.49
Group 4.....	\$ 31.37	24.49
Group 5.....	\$ 24.50	24.49
Group 6.....	\$ 32.37	24.49

LABORERS CLASSIFICATIONS

Group 1: Carpenter tenders, cement finisher tenders, laborers, wrecking laborers

Group 2: Asphalt rakers, fence and guard rail erectors,

laser beam operator, mason tender, pipelayer, pneumatic drill operator, pneumatic tool operator, wagon drill operator

Group 3: Air track operator, block pavers, rammers, curb setters

Group 4: Blasters, powdermen

Group 5: Flaggers

Group 6: Asbestos abatement, toxic and Hazardous waste laborers

LAB01421-002 12/01/2021

	Rates	Fringes
Laborers:		
Group 1.....	\$ 41.33	27.37
Group 2.....	\$ 42.08	27.35
Group 3.....	\$ 42.33	27.35
Group 4.....	\$ 37.33	27.35
Group 5.....	\$ 40.43	27.35
Group 6.....	\$ 41.33	27.37

Group 1: Adzeman, Wrecking Laborer.

Group 2: Burners, Jackhammers.

Group 3: Small Backhoes, Loaders on tracks, Bobcat Type Loaders, Hydraulic ""Brock"" Type Hammer Operators, Concrete Cutting Saws.

Group 4: Yardman (Salvage Yard Only).

Group 5: Yardman, Burners, Sawyers.

Group 6: Asbestos, Lead Paint, Toxic and Hazardous Waste.

PAIN0035-010 07/01/2019

	Rates	Fringes
PAINTER		
NEW CONSTRUCTION:		
Brush, Taper.....	\$ 32.33	26.35
Spray, Sandblast.....	\$ 34.03	27.00
REPAINT:		
Bridge.....	\$ 50.66	27.00
Brush, Taper.....	\$ 29.65	26.35
Spray, Sandblast.....	\$ 31.35	27.00

PLUM0004-003 03/01/2023

FRANKLIN (Orange)

	Rates	Fringes
Plumber and Steamfitter.....	\$ 51.50	28.07

PLUM0104-004 09/17/2022

BERKSHIRE (Becket, Otis, Sandisfield); FRANKLIN (Except Monroe, Rowe, and the Western part of Charlemont); HAMPDEN; HAMPSHIRE

Rates Fringes

Plumbers and Pipefitters.....\$ 44.96 28.40

FOOTNOTE:

A. Two paid holidays, Independence Day and Labor Day, provided the employee has been employed seven days prior to the holiday by the same employer

PLUM0104-009 09/17/2022

BERKSHIRE (Except Otis, Becket, Sandisfield); FRANKLIN (Monroe, Rowe and the Western part of Charlemont)

Rates Fringes

Plumber and Steamfitter.....\$ 44.96 28.40

FOOTNOTE FOR PLUMBERS & STEAMFITTERS:

A. Paid holidays: Independence Day and Labor Day, provided the employee has been employed seven days prior to the holiday by the same employer.

TEAM0379-001 08/01/2022

Rates Fringes

Truck drivers:

Group 1.....	\$ 34.98	31.36+a+b
Group 2.....	\$ 35.15	31.36+a+b
Group 3.....	\$ 35.22	31.36+a+b
Group 4.....	\$ 34.44	31.36+a+b
Group 5.....	\$ 35.44	31.36+a+b
Group 6.....	\$ 35.73	31.36+a+b
Group 7.....	\$ 36.02	31.36+a+b

POWER TRUCKS \$.25 DIFFERENTIAL BY AXLE
TUNNEL WORK (UNDERGROUND ONLY) \$.40 DIFFERENTIAL BY AXLE
HAZARDOUS MATERIALS (IN HOT ZONE ONLY) \$2.00 PREMIUM

TRUCK DRIVERS CLASSIFICATIONS

- Group 1: Station wagons; panel trucks; and pickup trucks
- Group 2: Two axle equipment; & forklift operator
- Group 3: Three axle equipment and tireman
- Group 4: Four and Five Axle equipment
- Group 5: Specialized earth moving equipment under 35 tons other than conventional type trucks; low bed; vachual; mechanics, paving restoration equipment
- Group 6: Specialized earth moving equipment over 35 tons
- Group 7: Trailers for earth moving equipment (double hookup)

FOOTNOTES:

A. PAID HOLIDAYS: New Year's Day, Washington's Birthday,

Memorial Day, Independence Day, Labor Day, Patriot's Day, Columbus Day, Veteran's Day, Thanksgiving Day and Christmas Day

B. PAID VACATION: Employees with 4 months to 1 year of service receive 1/2 day's pay per month; 1 week vacation for 1 - 5 years of service; 2 weeks vacation for 5 - 10 years of service; and 3 weeks vacation for more than 10 years of service

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number,

005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this

initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISIO"

"General Decision Number: MA20230019 03/31/2023

Superseded General Decision Number: MA20220019

State: Massachusetts

Construction Type: Highway

County: Hampden County in Massachusetts.

HIGHWAY CONSTRUCTION PROJECTS

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

<p>If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:</p>	<p>. Executive Order 14026 generally applies to the contract.</p> <p>. The contractor must pay all covered workers at least \$16.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2023.</p>
<p>If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:</p>	<p>. Executive Order 13658 generally applies to the contract.</p> <p>. The contractor must pay all covered workers at least \$12.15 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2023.</p>

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number	Publication Date
0	01/06/2023
1	01/27/2023
2	03/31/2023

ENGI0004-019 06/01/2021

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
Group 1.....	\$ 48.73	29.25+A
GROUP 1.....	\$ 51.38	30.10
Group 2.....	\$ 48.23	29.25+A
GROUP 2.....	\$ 50.83	30.10

FOOTNOTE FOR POWER EQUIPMENT OPERATORS:
 A. PAID HOLIDAYS: New Year's Day, Washington's Birthday, Labor Day, Memorial Day, Independence Day, Patriot's Day, Columbus Day, Veteran's Day, Thanksgiving Day, Christmas Day

POWER EQUIPMENT OPERATORS CLASSIFICATIONS
 Group 1: Broom/Sweeper; Crane; Gradall; Post Driver (Guardrail/Fences)
 Group 2: Bulldozer; Grader/Blade

 ENGI0098-010 12/01/2016

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
Group 1.....	\$ 33.68	23.96+A
Group 2.....	\$ 33.37	23.96+A
Group 4.....	\$ 32.54	23.96+A

Footnote:
 A. Paid Holidays: New year's Day, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Columbus Day, Veterans Day, Thanksgiving Day and Christmas Day

POWER EQUIPMENT OPERATORS CLASSIFICATIONS
 Group 1: Backhoe/Excavator/Trackhoe; Bobcat/Skid Steer/Skid Loader; Loader
 Group 2: Milling Machine; Paver (Asphalt, Aggregate, and Concrete)
 Group 4: Roller

 * IRON0007-027 03/16/2023

	Rates	Fringes
IRONWORKER (ORNAMENTAL AND STRUCTURAL).....	\$ 38.55	32.32

 LABO0596-006 12/01/2021

	Rates	Fringes
LABORER (Traffic Control: Flagger).....	\$ 24.50	23.96

 LABO0999-002 12/01/2021

	Rates	Fringes
LABORER (Common or General).....	\$ 32.50	23.96

 PAIN0035-023 07/01/2019

	Rates	Fringes
PAINTER (Steel).....	\$ 50.66	30.90

SUMA2014-009 01/11/2017		

	Rates	Fringes
CARPENTER, Includes Form Work....	\$ 33.03	20.02
CEMENT MASON/CONCRETE FINISHER...	\$ 52.13	20.89
ELECTRICIAN.....	\$ 47.13	13.41
IRONWORKER, REINFORCING.....	\$ 46.21	21.27
LABORER: Asphalt, Includes Raker, Shoveler, Spreader and Distributor.....	\$ 33.10	18.09
LABORER: Concrete Saw (Hand Held/Walk Behind).....	\$ 44.43	14.18
LABORER: Landscape.....	\$ 44.11	18.85
OPERATOR: Forklift.....	\$ 51.63	0.00
OPERATOR: Mechanic.....	\$ 48.14	17.02
OPERATOR: Piledriver.....	\$ 43.87	18.04
PAINTER: Spray (Linestriping)....	\$ 38.30	17.43
TRAFFIC CONTROL: Laborer-Cones/ Barricades/Barrels - Setter/Mover/Sweeper.....	\$ 43.73	15.06
TRUCK DRIVER: Concrete Truck....	\$ 33.69	15.79
TRUCK DRIVER: Dump Truck.....	\$ 43.81	5.39
TRUCK DRIVER: Flatbed Truck....	\$ 48.53	0.00

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic

violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

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A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- * an existing published wage determination
- * a survey underlying a wage determination
- * a Wage and Hour Division letter setting forth a position on a wage determination matter
- * a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

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Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

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U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

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U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISIO"

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.15 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.29 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.44 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.

SC-1.01.B Additional Terms

Add the following new definition.

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 immediately after Paragraph 3.06.

3.07 *Public Records*

- B. 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-4.03 Differing Subsurface or Physical Conditions

Delete Paragraph 4.03.B in its entirety and insert the following in its place.

- B. Pursuant to MGL Chapter 30, Section 39N, *Construction contracts; equitable adjustment in contract price for differing subsurface or latent physical conditions*:

“If, during the progress of the Work, the Contractor or the Awarding Authority discovers that the actual subsurface or latent physical conditions encountered at the Site differ substantially or materially from those shown on the Plans or indicated in the Contract Documents either the Contractor or the contracting authority may request an equitable adjustment in the Contract Price of the Contract applying to Work affected by the differing Site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party making such claim to the other party as soon as possible after such conditions are discovered. Upon receipt of such a claim from a Contractor, or upon its own initiative, the contracting authority shall make an investigation of such physical conditions, and, if they differ substantially or materially from those shown on the Plans or indicated in the Contract Documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Plans and Contract Documents and are of such a nature as to cause an increase or decrease in the cost of performance of the Work or a change in the construction methods required for the performance of the Work which results in an increase or decrease in the cost of the Work, the contracting authority shall make an equitable adjustment in the Contract Price and the Contract shall be modified in writing accordingly.”

SC-5.01 Performance, Payment, and Other Bonds

Add the following immediately after Paragraph 5.01.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 immediately after Paragraph 5.02.A.

1. 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. “
2. If there is more than one surety company, the surety companies shall be jointly and severally liable.

SC-5.04 Contractor's Insurance

Add the following language at the end of subparagraph 5.04.A.1.

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 in 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.”

Delete the words “materially changed” per Massachusetts insurance Laws in subparagraph 5.04.B.4. line 2.

Add the following language at the end of subparagraph 5.04.C.1,

In compliance with MGL Chapter 152

SC-5.06 Property Insurance

Delete the words “or materially changed” per Massachusetts insurance Laws in Paragraph 5.04.C. line 3.

SC-6.02 Labor; Working Hours

Add the following immediately after Paragraph 6.02.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 immediately after Paragraph 6.02.B.

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-6.05 *Substitutes and “Or-Equals”*

Add the following language at the end of Paragraph 6.05.A.

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

SC-6.09 *Laws and Regulations*

Add the following immediately after Paragraph 6.09.A

1. MGL Chapter 260, Section 2B *Tort Actions Arising from Improvements to Real Property* shall apply.

SC-6.10 *Taxes*

Add the following 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 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.

SC-6.12 *Record Documents*

Add the following immediately after Paragraph 6.12.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, *Keeping and maintaining books, records, and accounts; statement of management on internal accounting control; financial statements; enforcement:*

“(b). . .(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-6.13 Safety and Protection

Add the following immediately after subparagraph 6.13.B.1. (added in Section 00 73 10).

2. 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.

3. 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*
 - Section 40E: Violations of Secs. 40A to 40E; punishment*
 - 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 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.)
 - State and Federal COVID-19 guidelines and procedures for the construction sector (as may be amended)

SC-6.20 Indemnification

Add the following immediately after subparagraph 6.20.C.3.

- D. The provisions of MGL Chapter 258, *Claims and Indemnity Procedure for the Commonwealth, its Municipalities, Counties and Districts and the Officers and Employees Thereof* shall apply.

SC-8.09 Limitations on Owner's Responsibilities

Add the following immediately after Paragraph 8.09.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-9.08 Decisions on Requirements of Contract Documents and Acceptability of Work

Replace “with reasonable promptness” with “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.

Add the following new paragraph immediately after Paragraph 9.08.D.

- E. 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-10.01 Authorized Changes in the Work

Add the following immediately after Paragraph 10.01.A.

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

SC-10.05 Claims

Add the following immediately after Paragraph 10.05.G.

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

SC-11.01. Cost of the Work

Add the following immediately after subparagraph 11.01.A.1.

- a. Comply with prevailing wage requirements included in Section 00 73 43.

Add the following immediately after subparagraph 11.01.A.4.

- a. Pursuant to MGL Chapter 149, Section 34B, *Contracts for public works; wages for reserve police officer*, the Contractor shall pay to any reserve police officer employed by him in any city or town, the prevailing rate of wage paid to regular police officers in such city or town.

Add the following immediately after subparagraph 11.01.A.5.d.

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

SC-12.01 *Change of Contract Price*

Add the following immediately after subparagraph 12.01.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/massdot-current-contract-price-adjustments>

Liquid Asphalt - \$662.50 per TON (June 2023)
Diesel - \$2.826 per GALLON (May 2023)
Gasoline - \$2.852 per GALLON (May 2023)
Portland Cement - \$181.15 per TON June 2023

- 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.
 - 1) **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.
 - 2) **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.
 - 3) **Period Price:** The Period Price for this Contract shall be the Liquid Asphalt Period Price, per Ton.
 - 4) **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.

- 5) 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.
- 1) 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.
 - 2) Price Adjustment: The Price Adjustment will be based on the variance in price from the Base Price to the Period Price.
 - 3) Period Price: The Period Price for this Contract shall be the current Diesel Period Price and Gasoline Period Price per Gallon.
 - 4) Applicability: The fuel Price Adjustment will apply to the overall Project.
 - 5) 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 Period Price of Portland cement.
- 1) 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.
 - 2) 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.
 - 3) Period Price: The Period Price for this Contract shall be the current Portland cement Period Price per Ton.
 - 4) 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.
 - 5) 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-14.02. *Progress Payments*

Add the following language to Paragraph 14.02.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 14.02. The forms listed in Section 00 60 00 and included in the Contract Documents will be utilized.

Add the following immediately after subparagraph 14.02.A.1.

- a. 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.

Add the following immediately after subparagraph 14.02.D.3.

- E. 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.

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

“(b) Not later than the 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.

“(c) 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.

“(d) If, within seventy days after the Subcontractor has substantially completed the subcontract Work, the Subcontractor has not received from the general Contractor the balance due under the subcontract including any amount due for extra labor and materials furnished to the general Contractor, less any amount retained by the Awarding Authority 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.

“(e) Within fifteen days after receipt of the demand by the Awarding Authority, but in no event prior to the seventieth day after substantial completion of the subcontract work, the Awarding Authority shall make direct payment to the Subcontractor of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general Contractor, less any amount (i) retained by the Awarding Authority as the estimated cost of completing the incomplete or unsatisfactory items of Work, (ii) specified in any court proceedings barring

such payment, or (iii) 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.

“(f) 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.

“(g) All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to subparagraph (f) 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.

“(h) 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 14.04 Substantial Completion

Add the following immediately after Paragraph 14.04.E.

- F. 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 14.07 Final Payment

Add the following immediately after subparagraph 14.07.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-15.01 Owner May Suspend Work

Add the following immediately after Paragraph 15.01.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 (a) 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-17.05 Controlling Law

Add the following immediately after Paragraph 17.05.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 00 73 74

GENERAL FEDERAL 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. All provisions that are not so amended or supplemented remain in full force and effect unless amended or supplemented in another Section. The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in this Section have the meanings stated below, if any, 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 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-18 – Add the following new Article 18 immediately after Article 17.

Article 18 - FEDERAL REQUIREMENTS

18.01 *General*

- A. Portions of 2 CFR Part 200 and Appendix II to Part 200 (Contract Provisions for Non-Federal Entity Contracts Under Federal Awards) shall apply and are incorporated by reference, based on Federal funding applicable to this Project.

18.02 *Small, Minority and Women's Businesses*

- B. If Contractor intends to let any subcontracts for a portion of the Work, Contractor shall take all necessary affirmative steps to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible. Affirmative steps will include:
 - 1. Placing qualified small and minority businesses and women's business enterprises on solicitation lists;
 - 2. Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;
 - 3. Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises;

4. Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises;
5. Using the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce.

18.03 *Domestic preferences for procurements*

- A. As appropriate and applicable, and to the extent consistent with law, and to the greatest extent practicable under a Federal award, provide a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products). The requirements of this section must be included in all subawards including all contracts and purchase orders for work or products under this award.
- B. For purposes of this section:
 1. "Produced in the United States" means, for iron and steel products, that all manufacturing processes, from the initial melting stage through the application of coatings, occurred in the United States.
 2. "Manufactured products" means items and construction materials composed in whole or in part of non-ferrous metals such as aluminum; plastics and polymer-based products such as polyvinyl chloride pipe; aggregates such as concrete; glass, including optical fiber; and lumber.

18.04 *Procurement of recovered materials*

- A. The Contractor shall comply with 2 CFR Part 200.322, "Procurement of recovered materials" and Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, as applicable. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds \$10,000 or the value of the quantity acquired during the preceding fiscal year exceeded \$10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

18.05 *Access to Records*

- B. The Federal awarding agency, Inspectors General, the Comptroller General of the United States, and the pass-through entity (Owner), or any of their authorized representatives, must have the right of access to any documents, papers, or other records of the non-Federal entity which are pertinent to the Federal award, in order to make audits, examinations, excerpts, and transcripts. The right also includes timely and reasonable access to the Contractor's personnel for the purpose of interview and discussion related to such documents.

18.06 *Prohibition on Certain Telecommunications and Video Surveillance Services or Equipment*

- A. As required by 2 CFR 200.216, recipients and subrecipients are prohibited from obligating or expending loan or grant funds to procure or obtain; extend or renew a contract to procure or obtain; or enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that use covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115-232, section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).
 - 1. For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities);
 - 2. Telecommunications or video surveillance services provided by such entities or using such equipment; and
 - 3. Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.
- B. In implementing the prohibition under Public Law 115-232, section 889, subsection (f), paragraph (1), heads of executive agencies administering loan, grant, or subsidy programs shall prioritize available funding and technical support to assist affected businesses, institutions and organizations as is reasonably necessary for those affected entities to transition from covered communications equipment and services, to procure replacement equipment and services, and to ensure that communications service to users and customers is sustained.

- C. See Public Law 115-232, section 889 for additional information.
- D. See also § 200.471.

18.07 *Equal Employment Opportunity*

- A. The Contract is considered a federally assisted construction contract and therefore, the following shall apply as provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."
- B. During the performance of this Contract, the Contractor agrees as follows:
 - 1. The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following:
 - a. Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
 - 2. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.
 - 3. The Contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing,

or action, including an investigation conducted by the employer, or is consistent with the Contractor's legal duty to furnish information.

4. The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
5. The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
6. The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
7. In the event of the Contractor's noncompliance with the nondiscrimination clauses of this Contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
8. The Contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each Subcontractor or vendor. The Contractor will take such action with respect to any Subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance.

Provided, however, that in the event a Contractor becomes involved in, or is threatened with, litigation with a Subcontractor or vendor as a result of such direction by the administering agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

- C. *Notice to Prospective Subcontractors of Requirements for Certifications of Non-Segregated Facilities* is included at the end of this Section. Contractor shall have submitted this form with its Bid and obtained signed copies of this form from each Subcontractor and Supplier at Notice of Award, which signed copies are incorporated into the Contract as attachments to the Agreement. Contractor shall obtain a signed form from additional Subcontractors and Suppliers.

18.08 *Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708)*

- A. Where applicable, for contracts awarded in excess of \$100,000 that involve the employment of mechanics or laborers, the Contractor will comply with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, the Contractor will compute the wages of every mechanic and laborer based on a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic will be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

18.09 *Davis Bacon Act and Copeland Anti-Kickback Act*

- A. Contractor shall comply with the Davis-Bacon Act (40 USC 3141 et seq.) (see Section 00 73 43) and Copeland Anti-Kickback Act (40 USC 3145) as supplemented by Department of Labor regulations (29 CFR Part 3, “*Contractors and Subcontractors on Public Buildings or Public Works Financed in Whole or in Part by Loans or Grants of the United States*”). The Act provides that Contractor or Subcontractor shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public facilities, to give up any part of the compensation to which they are otherwise entitled. Owner shall report all suspected or reported violations.

18.10 *Clean Air Act (42 U.S.C. 7401-7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as amended*

- A. Contractor to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).

18.11 *Debarment and Suspension (Executive Orders 12549 and 12689)*

- A. A contract award (see 2 CFR 180.220) must not be made to parties listed on the government-wide exclusions in the System for Award Management (SAM at <https://sam.gov/content/home>), in accordance with the OMB guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), “Debarment and Suspension.” SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.

18.12 *Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)*

- A. Contractor has filed with its Bid, the required “Certification for Contracts, Grants and Loans” OR “Standard Form LLL Disclosure of Lobbying Activities” (if applicable). The Contractor certifies to the Owner and every Subcontractor certifies to the Contractor that it will not and has not used federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining the Contract if it is covered by 31 U.S.C. 1352. The Contractor and every Subcontractor must also disclose any lobbying with non-federal funds that takes place in connection with obtaining any federal award. Such disclosures are forwarded from tier to tier, up to the Owner. Necessary certification and disclosure forms shall be provided by Owner.
 - 1. Certification for Contracts, Grants, and Loans (Lobbying) and Standard Form LLL Disclosure of Lobbying Activities are attached to this section. Contractor shall have submitted one of these forms with its Bid and obtained signed copies of the applicable form from each Subcontractor and Supplier at Notice of Award, which signed copies are incorporated into the Contract as attachments to the Agreement. Contractor shall obtain the applicable signed form from additional Subcontractors and Suppliers.

ATTACHMENTS

- A. Certificate of Non-Segregated Facilities
- B. Certification for Contracts, Grants, and Loans (for no lobbying)
- C. Standard Form LLL Disclosure of Lobbying Activities

END OF SECTION

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**NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENTS FOR
CERTIFICATIONS OF NON-SEGREGATED FACILITIES**

A certification of Nonsegregated Facilities, as required by the May 9, 1967, order (32F.R. 7439, may 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted prior to the award of a subcontract exceeding \$ 10,000 which is not exempt from the provisions of the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

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

DATE _____

(Signature of Bidder or Prospective Contractor)

Address (including Zip Code)

CERTIFICATION FOR CONTRACTS, GRANTS AND LOANS

The undersigned certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant or Federal loan, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant or loan.

2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant or loan, the undersigned shall complete and submit Standard Form - LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.

3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including contracts, subcontracts, and subgrants under grants and loans) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

(name)

(date)

(title)

oOo

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See Reverse for public burden disclosure.)

1. Type of Federal Action: <input type="checkbox"/> a. contract <input type="checkbox"/> b. grant <input type="checkbox"/> c. cooperative agreement <input type="checkbox"/> d. loan <input type="checkbox"/> e. loan guarantee <input type="checkbox"/> f. loan insurance	2. Status of Federal Action: <input type="checkbox"/> a. bid/offer/application <input type="checkbox"/> b. initial award <input type="checkbox"/> c. post-award	3. Report Type: <input type="checkbox"/> a. initial filing <input type="checkbox"/> b. material change For Material Change Only: year _____ quarter _____ date of last report _____
4. Name and Address of Reporting Entity: <input type="checkbox"/> Prime <input type="checkbox"/> Subawardee Tier _____, if known: Congressional District, if known:	5. If Reporting Entity in No. 4 is a Subawardee, Enter Name and Address of Prime: Congressional District, if known:	
6. Federal Department/Agency:	7. Federal Program Name/Description: CFDA Number, if applicable:	
8. Federal Action Number, if known:	9. Award Amount, if known: \$	
10. a. Name and Address of Lobbying Registrant <i>(If individual, last name, first name, MI):</i>	b. Individuals Performing Services <i>(Including address if different from No. 10a)</i> <i>(last name, first name, MI):</i>	
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less that \$10,000 and not more than \$100,000 for each such failure.	Signature: _____ Print Name: _____ Title: _____ Telephone No.: _____ Date: _____	
Federal Use Only:		Authorized for Local Reproduction Standard Form LLL (Rev. 7-97)

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.
2. Identify the status of the covered Federal action.
3. Identify the appropriate classification of this report. If this a followup report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred, Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.
4. Enter the full name, address, city, State and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be a prime or subaward receipt. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.
5. If the organization filing the report in item 4 checks "Subawardee," then enter the full name, address, city, State and zip code of the prime Federal recipient. Include Congressional District, if known.
6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.
7. Enter the Federal program name or description for the covered Federal action (Item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans and loan commitments.
8. Enter the most appropriate Federal identifying number available for the Federal action identified in Item 1 (e.g., Request for Proposal (RFP) number; Invitation for bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Include prefixes, e.g. "RFP-DE-90-001."
9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in Item 4 or 5.
10. (a) Enter the full name, address, city, State and zip code of the lobbying registrant under the Lobbying Disclosure Act of 1995 engaged by the reporting entity identified in Item 4 to influence the covered Federal action.

(b) Enter the full names of the individual(s) performing services, and include full address if different from 10 (a). Enter Last Name, First Name and Middle Initial (MI).
11. Certifying official shall sign and date the form, print his/her name, title and telephone number.

According to the Paperwork Reduction Act, as amended, no persons are required to respond to a collection of information unless it displays a valid OMB Control Number. The valid OMB control number for this information collection is OMB No. 0348-0046. Public reporting burden for this collection of information is estimated to average 10 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, DC 20503.

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
- E. Attachments

1.02 PROJECT DESCRIPTION

- A. The Project is generally described as replacement of an existing culvert conveying flow from White Brook beneath North Street (a MassDOT classified urban minor arterial roadway), construction of an additional culvert beneath an adjacent private driveway, installation of stormwater structures and piping, and the rehabilitation of the existing roadway and surface conditions adjacent to the crossing culverts; and all materials and equipment, construction, and services inherent to the Work.

1.03 DESCRIPTION OF THE WORK

- A. The Work includes labor, material and equipment, services required for construction, testing, and commissioning of the Project 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 principal features.
 - 1. Installation of temporary erosion and sedimentation control measures including a coffer dam, turbidity curtain, and sediment barriers.
 - 2. Providing temporary support and protection for existing utilities designated to remain within the Project limit of work.
 - 3. Excavation and removal and disposal of the existing cross culvert underneath North Street.
 - 4. Installation of cast-in-place mat foundation, arched crossing culvert, associated headwalls, stormwater drainage structures and piping along, and adjacent to North Street; and backfilling with proposed lightweight aggregate materials.

5. Installation of rip rap at each end of the North Street arched crossing culvert.
 6. Repair of any temporarily disturbed areas adjacent to the stream bed.
 7. Grading adjacent to North Street.
 8. Paving, installation of guardrail and rehabilitation of surface conditions along North Street.
 9. Installation of 36" Reinforced Concrete Pipe underneath adjacent private driveway and its associated headwalls; and backfilling, installation of rip rap along the top of the headwall slopes, and repaving of the driveway
 10. Stabilization of affected surface areas within the Project limit of work; and all material and equipment, construction and services inherent to the Work.
- B. Work Site locations: generally as shown on the Drawings.
- C. Work by Owner
1. The Owner will contract with a wetland scientist to conduct third-party oversight of stream restoration

1.04 WORK SEQUENCE AND COORDINATION

- A. Sequence
1. Sequence Work to minimize shutdowns and reflect sequencing in the construction schedule.
- B. Coordination
1. Coordinate Work with the Town and relevant permitting agencies, as required by Contract Documents.
 2. Maintain access to facilities for the Owner throughout the Project.

1.05 SPECIAL REQUIREMENTS

- A. Portions of the Work are within wetlands, stream, and riverfront resource areas, and are subject to the jurisdiction of the Town's Conservation Commission, the Massachusetts Department of Environmental Protection, and the Army Corps of Engineers. Comply with the special requirements of the Order of Conditions, Water Quality Certification, and Army Corps General Permits included in the Appendices.
- B. Portions of this work include the temporary support and protection of existing utility services. Coordinate the proposed protective measure for these utilities through the Town's Department of Public Works.

- C. Coordinate permitting through the Town's Department of Public Works to obtain road opening and trench permits referenced in Section 00 73 73.
- D. Coordinate inspection of the existing and prepared mat foundation subgrade with the Engineer. Do not proceed with effective work before inspection and approval of the Engineer.
- E. Coordinate with Owner and Engineer for and provide public notification on the Project as specified below.
 - 1. Notification to Owner and Engineer no less than 30 days prior to beginning Work in a new area of the Project to allow for Owner and Engineer to complete pre-Project notification to residents.
 - 2. Notification to residents who will experience an interruption in water service, no less than 48 hours prior to interruption in water service. See Interruption Notification attached to this section.
 - 3. Notification to residents who will be connected to the temporary bypass system, no less than 24 hours prior to connection to temporary bypass. See Bypass Notification attached to this section.

1.06 ATTACHMENTS

- A. Water Service Interruption Notification
- B. Temporary Bypass Notification

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

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Water Service Interruption Notification Text

WATER SERVICE INTERRUPTION

The [INSERT OWNER NAME] is completing repairs on the distribution system in this area. As a result of the Work on this Project, your water service will be disrupted on _____, _____ starting at _____ for approximately _____ hours. Please make any necessary arrangements as you may be without water during this period. When your water service is restored, it is recommended that you clean removable aerators or faucet screens, if present, and run an interior cold and an outside faucet for several minutes. If you experience discolored water even after flushing for several minutes, please run your outside faucet until the water runs clear. If you have any questions, please contact the [INSERT CITY/TOWN] [Department of Public Works] at [phone number]. Thank you for your cooperation with these essential repairs.

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Temporary Water Bypass Notification Text

TEMPORARY WATER SYSTEM CONNECTION NOTICE

The [INSERT OWNER NAME] is completing repairs on the distribution system in this area. As a result of the work on this project, the City will supply your water through a temporary bypass system for the duration of the work. In order to complete the temporary bypass connection, the [INSERT CITY/TOWN] Contractor will need to access your water meter between _____, 20__ and _____, 20__ . Please contact the Contractor's Office at [Phone Number] to schedule this service.

Once you are connected to the temporary bypass system, your water will operate as normal. Should you experience issues with the temporary water system, please contact the [INSERT CITY/TOWN] [Department of Public Works] at [Phone Number]. If you experience an unexpected interruption in water service, please contact the Contractor's emergency response personnel:

1. [Name of Emergency Contact 1] at [Phone Number]
2. [Name of Emergency Contact 2] at [Phone Number]
3. [Name of Emergency Contact 3] at [Phone Number]

Thank you for your cooperation with these essential repairs.

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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. This Section applies to all Specifications and Drawings.
- B. Certain provisions required by Laws and Regulations may be referenced. Contractor is responsible to determine and obtain applicable Laws and Regulations and to review and interpret the full text of such Laws and Regulations.
- C. 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

1.04 QUALITY REQUIREMENTS

- Reference Standards and Regulatory Requirements

1.02 PAYMENT PROCEDURES

- A. Schedule of Values: in accordance with Article 2 of the Standard General and Supplementary Conditions, if any.
 - 1. Number of hardcopies: 1
 - 2. Submit electronically via web-based electronic document management control system in PDF format.

3. Provide sufficient detail to allow for determination of the value of the Work at any degree of completion.
 4. For each line item, identify number and title of Specification section in accordance with the Table of Contents.
- 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.
 - a. Number of hardcopies: 6
 - b. Submit electronically via web-based electronic document management control system in PDF format.
 2. Payment Period: at intervals stipulated in the Agreement.
 3. Submit an updated Progress Schedule with each Application for Payment.
 4. Submit the following items for the Project.
 - a. Police details will be direct billed by the police department to Owner. Provide daily detail slips to the Engineer. Police details scheduled and not used by the Contractor will be back charged to Contractor.
- 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: 6
- Submit electronically via web-based electronic document management control system in PDF format.
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. 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 subparagraph 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 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.
- 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.
 - 4. 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.
 - 5. Identify correspondence, submittals, drawings, data and materials, packing slips or other items associated with this Contract as follows.

NORTH STREET CULVERT REPLACEMENT

6. 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.
7. 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 startup
 - 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.

8. Progress Meetings
 - a. Owner to schedule progress meetings beginning no later than 60 days after the Initial Conference and continue thereafter on a biweekly 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.
9. 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 via web-based electronic document management control system in PDF format.

- 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

a. Documentation of Pre-Construction Conditions

- 1) Submit photographs prior to starting construction to record Site conditions. Ensure existing conditions that might be affected by the Work are clearly recorded. Identify photographs with date, time, orientation and Project identification. Re-take any photograph furnished which, in the opinion of the Engineer, is of poor quality or incomplete at no additional cost to Owner.
- 2) Format: 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 hardcopies: 1

Submit electronically via web-based electronic document management control system in PDF format.

- b. Documentation of Construction Progress
- 1) Submit photographs of with Payment Application monthly during progress of Work. Identify photographs with date, time, orientation and Project identification. Re-take any photograph furnished which, in the opinion of the Engineer, is of poor quality or incomplete at no additional cost to Owner.
 - 2) Format: PDF or JPG format, minimum 300 dpi quality and a minimum resolution of 6.0 megapixels.

Number of hardcopies: 1

Submit electronically via web-based electronic document management control system in PDF format.

- c. Documentation of Final Conditions
- 1) Submit photographs with Application for Final Payment to record final conditions. Identify photographs with date, time, orientation and Project identification. Re-take any photograph furnished which, in the opinion of the Engineer, is of poor quality or incomplete at no additional cost to Owner.

Format: 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 hardcopies: 1

Submit electronically via web-based electronic document management control system in PDF format.

4. Reports

- a. Submit weekly Safety Reports signed by the Safety Representative.
- 1) Updates to the Construction Operations Plan approved pursuant to SC 2.07 of Section 00 73 10 when it is modified

Number of hardcopies: 1

Submit electronically via web-based electronic document management control system in PDF format.

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 below. Coordinate submission of related items.

Engineer:

Woodard & Curran
40 Shattuck Road, Suite 110, Andover, MA 01810
Attn: Kendra Dow
Phone: (978) 417-0416
Email: kdow@woodardcurran.com

Owner:

Agawam Engineering Division
1000 Suffield Street, Agawam, MA 01001
Attn: Michelle C. Chase, P.E., Town Engineer
Phone: 413-821-0625
Email: mchase@agawam.ma.us

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 via web-based electronic document management control system in PDF format.

- 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 10-15 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 hardcopies: 1

Submit electronically via web-based electronic document management control system in PDF format.

- a. Complete a Submittal Transmittal (Form 00 62 11) 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 Submittal Transmittal number in resubmittals. Do not combine new submittals with resubmittals.
 - b. Attach a Submittal Transmittal to each group of Shop Drawings, manufacturer's literature, equipment data and Samples submitted. Use a sufficient number of Submittal Transmittal forms so that: items on a single Submittal Transmittal form pertain to the same equipment item, Specification section or element of Work; items on a single Submittal Transmittal form are either original submittals or the same number resubmittal; and each Sample is listed on a separate Submittal Transmittal form.
 - c. Submittals which do not have a fully completed Submittal Transmittal form will be returned along with unreviewed attachments. Returned submittals, even though incomplete, will be counted as a submittal.
 - d. 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.
 - e. Engineer to complete review in accordance with Paragraph 6.17.D. of the Standard General and Supplementary Conditions, if any.
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, startup, adjusting, and finishing.

Number of hardcopies: 1

Submit electronically via web-based electronic document management control system in PDF format.

- 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.
- a. Legibly mark each item to record description of actual equipment and material installed and actual construction on the Drawings and approved submittals, including the following.
 - 1) Manufacturer's name and equipment and material model and number
 - 2) Material and equipment substitutions or alternates utilized
 - 3) Approved changes
 - 4) Measured depths of foundations

- 5) Measured horizontal and vertical locations of Underground Facilities and appurtenances, referenced to permanent surface improvements
 - 6) Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work
 - 7) Field changes of dimension and detail
 - 8) Details not on original Contract Documents or Shop Drawings
- b. *As-Builts for Material and Equipment*
- Number of prints: **1**
- Electronic format: PDF
- Submit electronically via web-based electronic document management control system.
- Indicate "As-Supplied" in revision block and sign. Show all changes and revisions to Final Completion. Include with Operation and Maintenance Data Part 2 below (if applicable).
- c. *Drawings Conformed by Contractor to Construction Records:* Submit the following.
- Number of prints: **2**
- Electronic format: PDF, DWG
- Submit electronically via web-based electronic document management control system.
- Indicate "Conformed by Contractor to Construction Records" in revision block and sign. Show all changes and revisions to Final Completion.
- d. *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.
- 1) Submit in searchable PDF format via web-based electronic document management control system in PDF format.

- 2) Submit 2 copies in ring binders with durable plastic covers and table of contents.

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.
3. Specific requirements applicable to the Project include the following.
 - a. Comply with the Massachusetts Department of Transportation - Highway Division's (referred to as "MassDOT") Standard and Supplemental Specifications (but not including Compensation sections), Construction Details (including Standard Drawings), and Design Guides as incorporated into the Specifications and Drawings, and as may be modified therein or superseded by the Owner's requirements through the direction of the Engineer. Specific sections of the MassDOT documents are referenced in the Specifications and Drawings. References to "Department" in the MassDOT documents shall mean Owner or Resident Project Representative for this Project. See MassDOT Highway Division website for latest documents.

<https://www.mass.gov/massdot-highway-division-manuals-and-publications>

- b. MassDEP Bureau of Resource Protection-Wetlands Order of Conditions, MassDEP File #087-0689, issued February 13, 2023, included Section 00 31 00.
- c. U.S. Army Corps of Engineers General Permit Preconstruction Notification Authorization to be included in Section 00 31 00. (Permit Approval Pending)

END OF SECTION

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SECTION 01 43 05

QUALIFICATION REQUIREMENTS

PART 1 – GENERAL

1.01 SUMMARY

- A. Meet or provide capability to meet the criteria specified below and in individual Specification sections in connection with various portions of the Work of the Contract Documents.

1.02 GENERAL REQUIREMENTS

- A. Contractor shall have been regularly and actively engaged in similar Work as described in the Contract Documents, operating under the same business name and business organization structure, for the last 5 years on at least 5 projects.
- B. Contractor shall have:
 - 1. a full-time on-Site superintendent in responsible charge of the Work with at least 10 years' experience as superintendent on comparable projects;
- C. Contractor shall have successfully completed at least 5 projects involving construction of similar facilities as the Project within the last 5 years. "Similar facilities" means similar in type, character, physical size, and complexity to that required by the Contract Documents.

1.03 SPECIAL REQUIREMENTS

- A. Contractor or its Subcontractors shall have successfully completed:
 - 1. at least 10 projects that included either or a combination of stormwater, water and sewerage utilities within public streets within the last 10 years;
 - 2. at least 5 projects that included crossing culvert replacements across public roadways within the last 10 years.
 - 3. at least 5 projects that included pavement and street repair within public streets within the last 10 years.
 - 4. at least 10 projects with excavation support via sheeting within the past 5 years including at least 2 projects with excavation depth at least 15 feet in depth and soil conditions similar to that specified;

1.04 STATUTORY

- A. Any Work involving the removal, containment, or encapsulation of Asbestos or material containing Asbestos may only be performed by a licensed contractor in accordance with the provisions of MGL Chapter 149, Sections 6A-6E, applicable Laws and Regulations, and requirements as may be included in the Specifications and Drawings.

- B. 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.

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. This Section applies to all Specifications and Drawings and provisions of this Section may be supplemented in other sections of Division 01.
- B. Certain provisions required by Laws and Regulations may be referenced. Contractor is responsible to determine and obtain applicable Laws and Regulations and to review and interpret the full text of such Laws and Regulations.
- C. 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

- Pest Control
- Dust Control
- Water Control 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. Particular 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. Construct and maintain temporary roads accessing public thoroughfares to serve construction area. Control dust and water.
 2. Extend and relocate as Work progress requires. Provide detours necessary for unimpeded traffic flow.
 3. Provide for emergency access and maintain throughout the Work Site.

- F. Parking: as specified below.
1. Do not allow construction vehicle parking on existing pavement or sidewalks. The Contractor shall coordinate vehicle parking and staging with the Owner prior to mobilization.
- G. Field Offices: as specified below.
1. Furnish and maintain weather tight field offices (trailer or equivalent) with lighting, electrical outlets, heating, cooling and ventilating equipment, locking doors and windows, and equip with furnishings and accessories to accommodate supervision of Work, maintenance of records, and Project meetings, including, but not limited to the following.
 - a. Furnish separate office space within field office for use by Engineer and Resident Project Representative with a door sign on them main entrance displaying the Woodard & Curran logo, minimum 8.5 inches by 11 inches, fade resistant with magnetic backing, and similarly equipped with fully functional equipment and furniture.
 - Desk and chairs (2 cushioned office desk chairs and 4 metal folding chairs)
 - Plan table with light and stool
 - 3 locking file cabinets
 - Hanging plan rack
 - Book case with 4 shelves
 - Conference table and chairs to accommodate minimum 10 people
 - “All-in-one” color copier, printer, scanner and fax machine, capable of 11 inches by 17 inches output (OR separate color copier, color printer, color scanner, all capable of 11 inches by 17 inches output, and fax machine)
 - Paper stock and printer supplies for duration of Project
 - Telephone with answering machine (or telephone service with voicemail feature)
 - Refrigerator and microwave
 - Trash and recycling receptacles
 - First aid kit
 - Personal protective equipment for use by visitors
 - Water cooler for duration of Project
 2. Maintain utilities per Article 1.03 below for the duration of the Project.
 3. Location of Field Offices: Coordinate with Owner.
- H. Staging Area: Coordinate with Owner.

- I. Project Identification: as specified in Order of Conditions included in Section 00 31 00.
- J. 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. Power service: as specified below.
 - 1. Arrange for and pay for required power service from local electric utility for duration of Project. Exercise measures to conserve energy. Furnish and install required equipment including pole of sufficient height to provide proper clearance and install weatherproof box of such size to house service disconnect, overcurrent protection, electric meter, and other required equipment.
 - 2. Location: as designated by Owner.
- B. Internet access to field offices: Not required for the Project.
- C. Water service: as specified below.
 - 1. Arrange for, pay for and maintain suitable quality water service as required for duration of Project.
- D. Furnish and maintain required sanitary facilities and enclosures. Do not use existing facilities.
- E. Furnish lighting for construction operations. Furnish lighting for exterior staging and storage areas and for security purposes. Maintain lighting and provide routine repairs.
- F. Furnish heat devices and heat and cooling devices as required to maintain specified conditions for construction operations.
- G. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

H. 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.

1.04 TEMPORARY CONTROLS

- A. Pest Control: Provide methods, means, and facilities to control and prevent spread of pests during construction operations. If required, provide for extermination of pests in accordance with Laws and Regulations. For extensive infestations, obtain the services of a licensed exterminator and coordinate plan with Owner and Engineer.
- B. 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 and calcium chloride as needed to reduce the emission of air-borne soil particulates from the Project Site.
1. Spread additional calcium chloride in response to complaints at no additional cost to Owner.
- C. Water Control and Dewatering: provided in accordance with Section 01 57 05.
- D. Erosion and Sediment Control: provided in accordance with Section 01 57 13.
- E. Noise Control
1. Provide methods, means, and facilities to minimize noise from construction operations.
 2. Submit a Noise Control plan for:
 - a. Night work: 7 p.m. – 7 a.m.
 - b. Pumping operations and Work which extend beyond regular working hours.
 - c. Any other Work as determined by the Engineer which warrants special noise prevention measures.

- F. Pollution Control: as specified below.
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) Ensure that sediment, debris, petroleum, 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.
 - 4) Submit a plan and employ additional protective measures to prevent harm to White Brook as shown on the Drawings.
 - 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.

- G. Traffic Regulation: as specified below.
1. Submit traffic control plans and coordinate with Owner and local agencies. Submit plan for traffic control to Owner for review 14 days in advance of any Work within public right-of-way, street closure or detour.
 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.
 - a. Comply with applicable portions of the "Massachusetts Amendments to the 2009 Manual on Uniform Traffic Control Devices and the Standard Municipal Traffic Code" published by the Massachusetts Department of Transportation Highway Division.
 - b. Comply with relevant provisions of Section 7.00 of the MassDOT Standard Specifications and Supplements, and the following.
 - 1) The intent of posting police details is to ensure public safety and protection of property through appropriate traffic control. Police personnel are not to be employed as watchmen to protect the Contractor's equipment and materials.
 - 2) Payment will be made by Owner for uniformed traffic police only.
 - 3) Submit a forecast weekly for traffic police detail schedule, at least 72 hours prior to the start of the Work describing: the nature and location of the Work, the number of police personnel, the estimated number of police hours required for each location, and justification for each uniformed officer being requested. Payment to the police for work under this Contract shall be in accordance with the Massachusetts General Laws, Chapter 149, Section 34B.
 - 4) If uniformed police have been arranged to work, and weather or some other situation prohibits the Work, notify the Police Department Detail before 5:30 a.m. on the day of intended Work to cancel the work order. Unless the work order is canceled in time, the Contractor shall be charged at the rate of minimum four hours for each officer included in the detail and shall be fully responsible for payment of all charges thus incurred.

3. Coordinate schedule of police details with Owner.
 - a. Police details will be direct billed to the Owner per Section 01 20 25.
4. Provide safe access/egress to businesses and abutting property owners within the Project area. In areas where the construction activity is in progress, provide 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.
5. 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.
6. 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 57 05

TEMPORARY DEWATERING

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Design, provide, install, maintain operate and remove temporary construction dewatering systems as required to control groundwater levels during construction; dispose of pumped water; constructing, maintaining, observing, and, removing of equipment and instrumentation for control of the system except where indicated or required to remain in place.
2. Furnish, install, operate, and maintain dewatering equipment and systems as required to provide stable subgrades and dry excavations.

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Reference Standards

1. MassDEP Bureau of Resource Protection-Wetlands Order of Conditions Wetlands Order of Conditions, MassDEP File #087-0689, issued February 13, 2023.
2. Environmental Protection Agency National Pollutant Discharge Elimination System (NPDES)

B. Definitions

1. *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.
2. *Special Dewatering* is defined as installing wellpoints, deep wells, or eductor and ejector systems to control groundwater and hydrostatic pressures to allow for installation of the work. Special dewatering includes a dewatering system designed by a Professional Engineer licensed in the state where the Project is located who is in good standing and 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.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination, Sequencing, and Scheduling: per Division 01 General Requirements.
 - 1. Coordinate dewatering work with trenching operations, support of excavation systems, and excavation
- B. Pre-installation Conference: Conduct conference at Project Site at least 30 days prior to the start of dewatering activities.
 - 1. At a minimum, pre-installation conference shall be attended by the Owner, Engineer, Geotechnical Engineer, Contractor's Superintendent, support of excavation Installer, geotechnical instrumentation Installer, and dewatering Installer.
 - 2. Verify availability of dewatering Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 3. Review condition of site to be dewatered including coordination with temporary erosion-control measures and temporary controls and protections.
 - 4. Review geotechnical reports. "Geotechnical Engineering Report North Street Culvert over White Brook Agawam, Massachusetts," prepared by GZA, dated 21 April 2023.
 - 5. Review proposed site clearing and excavations. Confirm coordination with the earth support system, geotechnical instrumental monitoring, and trench excavation activities.
 - 6. Review requirements for observation, testing, and monitoring of dewatering system.
 - 7. NPDES Dewatering General Permit: The contractor is responsible for engaging a licensed Professional Engineer to design dewatering system...." also indicate that they're responsible for performing additional subsurface exploration and obtaining the permits (be clear on what permits are required)

1.05 SUBMITTALS

- A. Submit in accordance with Division 01 General Requirements.
- B. Approved NPDES Dewatering General Permit (DGP) or written approval from the Town of Agawam.
- C. Manufacturer's descriptive data, technical literature, catalog cuts, and installation instructions

- D. Qualifications for Installer and designer
- E. Dewatering Plan
 - 1. Submit plan prepared, signed, and sealed by a qualified designer registered in the state where Project is located at least 45 calendar days prior to commencement of the dewatering Work.
 - 2. Minimum contents of Dewatering Plan
 - a. Prepare or modify a dewatering plan, which shall minimally include identification of techniques for bypass of water around the area of alteration; and separately, identification of techniques for treatment of residual water (“seepage water”) within the area of alteration. All such plans shall completely segregate bypass water from residual water. This dewatering plan shall include:
 - 1) Plans and description of the Normal and/or Special Dewatering systems, including the number, location and depth of wells, wellpoints or sumps; designs of filters to prevent pumping of fine soil; method and location for filtering, sedimentation tanks and legal disposal of pumped water; and flow capacity of proposed system, accounting for groundwater level relative to tide cycles if applicable.
 - 2) Identification of any regulatory “time-of-year” (“TOY”) restrictions governing the proposed work [from the US Army Corps of Engineers “General Permit-Commonwealth of Massachusetts” (“MGP”); any Massachusetts Natural Heritage and Endangered Species Program directive; and any presumptive directions offered by the Massachusetts Division of Fisheries and Wildlife]. The Department will require adherence to TOY restrictions unless the applicant demonstrates that compliance with them is not practicable;
 - 3) Identification of any “Cold-water Fishery” (as defined at 310 CMR 10.04 and 314 CMR 9.02) within the subject reach where work is proposed, by reference to the Massachusetts Division of Fisheries and Wildlife “Coldwater Fishery Resources Index”;
 - 4) Use of temporary flume pipes to bypass flowing water in small rivers and intermittent streams, when flowing, and upstream and downstream temporary dams to isolate the work area and protect it from backwatering. Flume pipes shall be equipped with anti-seep collars where they pass through temporary dams, and fish screens on their upstream inverts. Flume pipes shall be sized to adequately handle at least a two-year storm event;

- 5) Use of cofferdams to isolate the area of alteration from flowing water in larger rivers, and in reservoirs, lakes, and ponds;
 - 6) Use of pumps and hose lines to dewater standing water held behind cofferdams, and to dewater residual water and leaked water in isolated work areas. The rating, type, and location of all pumps and the intake and discharge positions of all hoses shall be identified and located on the site plans;
 - 7) Use of appropriate energy dissipaters and erosion and sedimentation control best management practices at the discharge orifices of all bypass flume pipes and pump hoses;
 - 8) Treatment of pumped residual water prior to discharge back to resource areas. Techniques such as filter bags, frac tanks, and stilling basins shall be analyzed and specifically proposed;
 - 9) Salvage of sessile aquatic organisms (vertebrates, crayfish, freshwater mussels, etc.) stranded during dewatering;
 - 10) Structural and nonstructural best management practices to separate stormwater from the area of alteration during work and while the site is unstable;
 - 11) Assurance that the substrate of the area of alteration is stable prior to the re-establishment of flow within it.
- b. Design calculations and analysis data demonstrating the adequacy of the proposed dewatering system and its compliance with the performance requirements specified including calculations to estimate the quantity of discharge and calculations addressing excavation base stability and uplift
 - c. Local Best Management Practices for the dewatering system conditions
 - d. Plans, elevations, sections, and details
 - e. Arrangement, locations, and details of sumps, well points, deep wells, ditches; locations of risers, headers, filters, pumps, power units, and discharge lines; and means of discharge, control of sediment, and disposal of water.
 - f. Location of the discharge points and the method by which effluent will be conveyed.

- g. Complete description of equipment and materials to be used, and the procedure to be followed for installation, operation, and maintenance in relation to the proposed sequence of excavation and backfilling.
 - h. Methods to be used for drilling, construction, and development of dewatering wells
- F. Treatment System Plan
 - 1. Submit treatment system Plan prepared, signed, and sealed, by a qualified designer registered in the state where Project is located.
 - 2. Provide treatment system design and operating plan capable of meeting permit requirements (including NPDES DGP) prior to system installation and start-up which includes the following.
 - a. Layout drawings and site location plan including equipment sizes and capacities.
 - b. Operating plan including monitoring and maintenance schedule, screening and sampling program, and reporting schedule. The screening and sampling program shall, at a minimum, meet the sampling requirements of the NPDES DGP
 - c. Name of DEP-certified laboratory used for analyzing dewatering influent and effluent samples in accordance with the NPDES DGP
 - d. Stamps and signatures by licensed professionals for the design of the treatment system
 - e. Type of flow meter to measure volume of treated water discharged from the treatment system including calibration plan and methods
 - 3. Treatment system discharge flow meter calibration records and flow readings
 - 4. Laboratory results of dewatering influent and effluent samples
- G. Field Quality Control
 - 1. Average flow rate and time of operation of each pump used in the dewatering system on a daily basis during the period the dewatering system is in operation on form approved by the Engineer
 - 2. Volume stored in frac tanks and volume disposed of
 - 3. Reports of observations, field reports, including flow rate and groundwater level monitoring and daily field observation/inspection reports

- H. Closeout and Maintenance Material Submittals: per Division 01 General Requirements.
 - 1. Locations and depths of decommissioned wells and/or well points and other abandoned-in-place dewatering equipment for review and approval by the EOR and the Owner.

1.06 QUALITY ASSURANCE

- A. Provide in accordance with Division 01 General Requirements.
- B. Qualifications
 - 1. Installer: specialized in dewatering work continuously for at least five (5) years in similar subsurface conditions.
 - 2. Designer: professional civil/geotechnical engineer registered in the state where Project is located having a minimum five (5) years' experience and successfully designing dewatering systems in similar conditions.
 - a. For *Special Dewatering*, retain the services of a professional engineer registered in the state where Project is located who is in good standing and 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.
 - b. Contractor's dewatering professional engineer shall provide sufficient on-Site inspection and supervision to ensure that the dewatering is carried out in accordance with the approved design.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Provide in accordance with Division 01 General Requirements.

1.08 SITE CONDITIONS

- A. Existing Conditions: per Division 01 General Requirements.
 - 1. Review geotechnical and subsurface information provided with Contract Documents.
 - 2. Determine if additional test borings are required and conduct other exploratory operations necessary for dewatering according to the performance requirements at no additional cost to Owner.

3. Prior to start of any construction activity jointly inspect the Site with dewatering Installer, Owner and Engineer to observe and document the preconstruction condition of the site, existing structures, and facilities.

PART 2 – PRODUCTS

2.01 DEWATERING SYSTEM

- A. Design, furnish, install, test, operate, monitor, and maintain dewatering system of sufficient scope, size, and capacity to control groundwater levels and to lower, control, remove, treat, and dispose of groundwater and permit excavation and construction to proceed on dry, stable subgrades.
 1. Design dewatering system(s), including comprehensive engineering analysis by a qualified professional engineer, registered in the state where Project is located, using performance requirements and criteria indicated.
 2. Design dewatering system to:
 - a. lower groundwater level within the Work area without adversely affecting existing structures, utilities, pavements, sidewalks or wells outside of the Work area;
 - b. maintain groundwater levels inside the excavation at a minimum of 2 feet below the bottom of excavation and groundwater drawdown at a distance of 15 feet outside the excavation limited to no more than 5 feet. Continuously monitor groundwater levels inside and outside the excavation;
 - c. effectively reducing the hydrostatic pressure below excavation subgrade in the existing fills, organic peat, organic and inorganic silts/clays and sands and gravel, so that excavation bottoms are firm and dry and a factor of safety of at least 1.2 is maintained against uplift; and
 - d. be capable of 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. Basis of Design
 - a. Existing groundwater levels measured at the Site as reported in the geotechnical and subsurface information. Use piezometers installed as part of the geotechnical instrumentation program to confirm groundwater elevation prior to the start of excavation.

- b. Based on the variability of thicknesses and discontinuous nature of cohesive soil strata encountered, pressure relief wells may be required to prevent uplift of these cohesive strata during excavation and dewatering for installation of underground systems. Reduction of the extent of dewatering may be accomplished by installing a temporary cutoff such as steel sheet piling.
 - c. On-Site recharge of dewatering effluent is the preferred method for disposal. Review available geotechnical and subsurface information to identify those areas where the presence of low permeability soils may require storage in sedimentation tanks and/or transport of the dewatering effluent. Disposal of effluent within 100 feet of buildings is prohibited.
 - d. Locate groundwater control facilities where they will not interfere with the Work or the work of other contracts.
 - e. Provide for prevention of surface water from entering excavations by grading, dikes, or other means.
 - f. Provide for dewatering without damaging adjacent streets, utilities, existing buildings, structures, and site improvements adjacent to excavation.
 - g. Minimum capacity of back-up equipment for the dewatering system: equal to the primary equipment and available in operating condition continuously. Provide electrically operated dewatering equipment, powered with independent 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.
 - h. Materials and equipment: in compliance with accepted industry standards, in good operating condition, and able to perform satisfactorily over the required duration of construction dewatering, including pipes, well screens, filter sand, grout, pumps, meters, and controls.
- B. Provide units/equipment in accordance with approved Dewatering Plan.
- 1. 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.

2. 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.

2.02 TREATMENT SYSTEM

- A. Provide units/equipment in accordance with approved treatment system.
- B. Include properly sized and designed fractionation tank(s) with bag filtration system.
- C. Provide additional storage units to handle quantities of water in excess of treatment system capacity to allow Work to proceed without interruption.
- D. Provide flow meter at discharge locations to allow accurate measurement of flow rate and cumulative flow volume.

2.03 SOURCE QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.

PART 3 – EXECUTION

3.01 GENERAL

- A. Obtain necessary regulatory approvals and permits for operation of the dewatering system and the disposal of dewatering flows, including, among others, approval by under NPDES program for construction dewatering activities. Prepare and obtain the NPDES DGP.
- B. Maintain dewatering operations to ensure erosion control, stability of excavations, prevention of uplift, prevention of flooding in excavation, and prevention of damage to subgrades and adjacent structures. Make modifications to the dewatering system and/or operations if required performance is not met at no additional cost to the Owner.
- C. Do not perform Work below the pre-construction groundwater level during dewatering system failure.
- D. Do not use dewatering pumps on Site without factory installed sound attenuating equipment.
- E. Perform Work in accordance with approved Dewatering Plan.

3.02 INSTALLATION

- A. Furnish, install, operate, and maintain dewatering equipment and systems as required to provide stable subgrades and dry excavations, including but not limited to the following.
 - 1. Construction dewatering at all typical open-trench excavations along the drainage pipe alignments and associated drainage structures
- B. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by dewatering operations.
 - 1. Prevent surface water, flows from the adjacent brook, and subsurface or groundwater from entering excavations, from ponding on prepared subgrades, and from flooding site or surrounding area.
 - 2. Protect subgrades and foundation soils from softening and damage by rain or water accumulation.
- C. Install dewatering system within limit of Work. Minimize interference with roads, streets, walks, and other adjacent occupied and used facilities. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction. Do not operate equipment on paved surfaces to prevent damaging these surfaces.
- D. Locate dewatering facilities to prevent interference with utilities and construction work to be done by others.
- E. Provide temporary grading to facilitate dewatering and control of surface water. If utilized, local sump pumps should be surrounded by 3/4-inch Crushed Stone wrapped in non-woven filter fabric to limit migration of fines.
- F. Install dewatering system utilizing sumps, wells, well points, or similar methods complete with pump equipment, standby power and pumps, filter material, valves, appurtenances, water disposal, and surface-water controls as indicated on approved Dewatering Plan.
 - 1. Space sumps, well points or wells at intervals required to provide sufficient dewatering.
 - 2. Use filters or other means to prevent loss of fine sands or silts during dewatering activity.

- G. Provide system to lower and control groundwater to permit excavation and construction in the dry for open-cut excavation and excavation inside sheeting. Install sufficient dewatering equipment to drain water-bearing strata above and below bottom of carrying pipes and casings.
- H. Provide sumps, sedimentation tanks, and other flow-control devices as required by authorities having jurisdiction.
- I. Provide standby equipment on Site, installed, and available for immediate operation, to maintain dewatering on continuous basis if any part of system becomes inadequate or fails. If dewatering requirements are not satisfied due to inadequacy or failure of dewatering system, restore damaged utilities, structures, foundation soils, and other facilities at no additional expense to Owner.
- J. Be prepared to modify the dewatering system and methods as required by actual field conditions encountered during construction, at no additional cost to the Owner.
- K. Install, measure, record, and report water levels at vibrating wire piezometers.
- L. Monitor quality of discharge from dewatering system to determine if soil particles are being removed from the system.
 - 1. 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.
 - a. For dewatering operations with relatively minor flows, direct pump discharges using filtration bag or system per erosion and sediment control requirements, 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.
 - b. For dewatering operations with larger flows, provide 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.
 - c. Utilize silt sacks in catch basins when excess silt is suspended in the discharge water per erosion and sediment control requirements. If siltation basin is used, size to effectively filter for the volume and discharge rate of water anticipated without overflow.
- M. Take measures to prevent damage to adjacent buildings, structures, utility lines, and work resulting from groundwater pumping.

- N. Modify system if, after installation and while in operation, it causes or threatens to cause damage to existing buildings, structures, utilities, or facilities.
- O. Repair damage, disruption, or interference resulting directly or indirectly from dewatering operations as approved by its Engineer.
- P. Special Dewatering
 - 1. Use *Special Dewatering* as necessary if *Normal Dewatering* methods are inadequate to ensure dry and stable excavation subgrade conditions.
 - 2. *Special Dewatering* techniques may consist of one- or two-stage wellpoint systems, deep wells, or eductor and ejector type systems. Design with suitable screens to prevent pumping of fines and to address specified Work Site conditions.
 - 3. 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 excavation has been backfilled. Provide monitoring by Contractor's dewatering professional engineer.
 - 4. Furnish materials and install at least 2 observation wells at each excavation area at locations proposed by the Contractor's dewatering professional engineer and reviewed and approved by Engineer.

3.03 OPERATIONS

- A. Operate system continuously until proposed construction is completed and backfill materials have been placed or until dewatering is no longer required in accordance with the requirements of the Engineer and Owner and permits.
- B. Monitor dewatering systems continuously.
- C. Promptly repair damages to adjacent facilities caused by dewatering.
- D. Operate system to lower and control groundwater to permit excavation, construction of structures, and placement of backfill materials on dry subgrades.
 - 1. Do not permit open-sump pumping that leads to loss of fines, soil piping, subgrade softening, and slope instability.
 - 2. Maintain groundwater water levels a minimum of 24 inches below bottom of excavation, inside the excavation.
 - 3. Limit groundwater drawdown outside the excavation to no more than 5 feet from preconstruction levels at a distance of 15 feet from the excavation.

- E. Maintain a sufficient volume of water in the frac tanks to prevent oil, if present, from exiting the frac tank. Take steps to remediate oil released from the frac tanks.
- F. Furnish, install, operate, maintain, and remove all necessary equipment to perform pH adjustments if required to meet the pH discharge limits required under the NPDES DGP.
- G. Sample and analyze the dewatering influent and effluent to meet system maintenance requirements and the NPDES DGP requirements.
- H. Meet standards and requirements of the NPDES DGP.
- I. Include any other items incidental to the placement on Site, operation, maintenance, disconnection, dismantling, and removal of the treatment system.
- J. Report any sign of subgrade disturbance due to seepage or unaccountable change in effluent flow rate to the Engineer and steps immediately taken to correct the condition.
- K. Implement additional treatment and different permits if necessary and if sheen or oil is observed in the dewatering effluent.
- L. Legally dispose of water removed by dewatering to avoid endangering public health, property, and portions of Work under construction or completed and legally dispose of sediment off Site at an appropriate disposal site.

3.04 MONITORING

- A. Install an adequate number of observation wells to monitor the dewatering operations for the duration of the Work.
- B. Provide continual observation to ensure that subsurface soils are not being removed by the dewatering operation.

3.05 PROTECTION

- A. Protect and maintain dewatering system during dewatering operations.
- B. Promptly repair damages to adjacent facilities caused by dewatering.

3.06 DECOMMISSIONING

- A. Remove dewatering system from the Project Site upon completion of dewatering.
- B. Unless otherwise directed by the Engineer, remove piezometers and fill well holes with sand-cement grout and cut off wells a minimum of 24 inches below finished grade.

3.07 FIELD QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.

3.08 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Division 01 General Requirements.

END OF SECTION

SECTION 01 57 13

TEMPORARY EROSION AND SEDIMENT CONTROLS

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Provide and maintain devices to control erosion, siltation, sedimentation, and dust that occur during construction operations in accordance with this Section, applicable reference standards listed in Article 1.03, as may be shown on the Drawings and as required by Laws and Regulations.
2. Attendance at Preconstruction On-Site Conference with the Town of Agawam Conservation Agent and/or a member of the Conservation Commission.

B. Related Requirements

1. Division 31 Earthwork, all sections

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Reference Standards

1. MassDEP Bureau of Resource Protection-Wetlands Order of Conditions, MassDEP File #087-0689, issued February 13, 2023.
2. U.S. Composting Council (USCC)
3. Massachusetts Executive Office of Environmental Affairs, Massachusetts Erosion & Sedimentation Control Guidelines for Urban and Suburban Areas
4. MassDOT Standard Specifications and Supplements and Construction Details
 - a. M6.04.2 Straw Mulch
 - b. 767 Mulching and Erosion Control

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination, Sequencing, and Scheduling: per Division 01 General Requirements.
 - 1. Prior to the commencement of any activity on Site, arrange and attend Preconstruction On-Site Conference with the Conservation Agent and/or a member of the Conservation Commission, Engineer, and Contractor's superintendent in accordance with Section 01 15 30.

1.05 SUBMITTALS

- A. Submit in accordance with Division 01 General Requirements.
- B. Product Data
 - 1. Siltation fence
 - 2. Erosion control mulch sock/tube
 - 3. Temporary erosion control matting
 - 4. Siltation control devices
- C. Erosion and sediment control plan prior to the start of construction
- D. Closeout and Maintenance Material Submittals: per Division 01 General Requirements.

1.06 QUALITY ASSURANCE

- A. Provide in accordance with Division 01 General Requirements.
- B. Conform to all requirements of applicable federal, state and local permits, including the Erosion and Sedimentation Control Details shown on the "Civil Details – 1" Drawing, and the local Conservation Commission.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Provide in accordance with Division 01 General Requirements and the Order of Conditions.
- B. Composting materials: provided with a Certificate of Compliance from USCC's Seal of Testing Assurance (STA) Program Certified Laboratory, verifying that the compost meets the parameters listed herein and certification not older than 90 days.

1.08 SITE CONDITIONS

- A. Existing Conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Siltation Fence: Mirafi Environfence, Amoco 1380 Silt Stop, or equal.
- B. Mulch Sock/Compost Filter Tube
 - 1. Type and use: as specified by the Massachusetts Erosion & Sedimentation Control Guidelines for Urban and Suburban Areas.
 - 2. Long fibered hay, grass mowings, or straw, in dry condition and which are relatively free of weeds and foreign matter detrimental to plant life.
 - 3. Mulch binder: asphalt emulsion mulch binder of type acceptable to the Engineer.
 - 4. Mulch netting: plastic or nylon mesh netting with approximate openings of 1/8 inch; or other netting approved by the Engineer.
 - 5. Color: orange or orange striped for visibility.
 - 6. Tensile strength: minimum 202 psi per ASTM D5035 with ultra-violet exposure resistance of 100 percent at 1,000 hours per ASTM G155.
 - 7. Stakes for installing compost filter tubes: 1-1/2 inches square hard wood stakes, trimmed to a blunt end.
 - 8. Compost fill material for the compost filter tube: certified though the USCC's STA Program and not derived from agricultural, food, or industrial residues; bio-solids (treated sewerage sludge); yard clippings; source-separated or mixed solid waste, free from man-made foreign matter, and without objectionable odors.

C. Seeding

1. 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	Sundangrass	0.9
9/15 to 10/15	Winter Ryegrass	2.6

- D. 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 1 year old and not older than 3 years, and cut with a 1/2 inch to 1 inch layer of soil.
- E. Drains: Flexible drains consisting of collapsible neoprene pipe, minimum 8 inch diameter.
- F. Hay Bales: rectangular shaped bales of hay or straw weighing at least 40 pounds per bale, free from noxious weed seeds and rough or woody materials.
- G. Siltation Control Devices
 1. Dirtbag or equivalent, to be used on the discharge of any excavation dewatering setup.
 2. Inlet Protection (Silt Sack) Acceptable Manufacturers
 - a. ACF Environmental, Wilmington, MA
 - b. Atlantic Construction Fabrics, Inc, Richmond VA
 - c. ESS Brothers & Sons Inc, Loretto, MN
 - d. Bowhead Manufacturing Company, Seattle, WA
 3. Material: woven polypropylene geotextile material with built-in high-flow relief systems (overflow weirs). Manufacture for a 24 inch by 24 inch opening under regular flow conditions and to fit the catch basin or drop inlet to which it is to be installed with capability of being removed, emptied and reinstalled.

- H. Turbidity Curtain: manufactured for regular flow conditions and to fit the brook section which it is to be installed.

Parameters	Values
Floataion Element	Cylindrical,internal closed cell foam
Floataion Cover	PVC coated polyester
Ballast	5/16 in galvanized chain 1.1 lbs/ft
End Connectors	Grommated end/tow plates and lacing grommets
Skirt Material	
Weight	6.2 oz/yd ²
Tensile Strength	390-280 lb
Elongation Break	25 %
Mullen Burst	530 psi
Puncture Strength	140 lb
Tear Strength	100-80 lb
Eos US Std Sieve	210 μ 70 μ

I. Erosion Control Matting

1. Provide erosion control matting for slope stabilization as shown on the Drawings or as directed by the Engineer in accordance with this Specification and in compliance with the Order of Conditions.
2. Provide with soft pine wood wedges and stakes of entirely of biodegradable materials as recommended by the manufacturer.
3. Erosion control blanket (coir log): coconut fiber mats woven into a matrix complying with the following.

PROPERTY	Test Method	Parameter
Weight	ASTM D3776	17.8 oz/SY (600 g/m ²)
Wide width tensile strength Wet Machine direction Cross direction	ASTM D4595	910 lbs/ft (13.3 kN/m) 870 lbs/foot (12.7 kN/m)
Wide width tensile strength Dry Machine direction Cross direction	ASTM D4595	1130 lbs/foot (16.5 kN/m) 1040 lbs/foot (15.2 kN/m)
Elongation at failure Wet Machine direction Cross direction	ASTM D4595	32 percent 26 percent
Open area	Calculated	58 percent
Thickness	ASTM D177	0.35 inch (9 mm)
Recommended shear stress		4 lbs./sq. ft. (192 N/sq.m.)
Recommended flow		10 fps (3 m/s)
Recommend slope		2:1

- J. Straw mulch: MassDOT M6.04.2, long fibered straw, 100 percent certified weed free, free from foreign matter detrimental to plant life, and in dry condition.
- K. Tackifier: biodegradable and non-toxic bonding adhesive agent during hydraulic seeding or straw mulching to minimize wind and water effects.
- L. Catch Basin Silt Sacks
 - 1. Style: Silt Sack Regular Flow.
 - 2. Test Method: ASTM D-4884 165.0 lbs./inch.
 - 3. Silt sack seams: certified average wide width strength.
 - 4. Meet the following ASTM D-4884 standards. Properties are Minimum Average Roll Values (MARV).

Property	Test Method	Units	Test Results
Grab Tensile	ASTM D4632	lbs.	315x300
Grab Elongation	ASTM D4632	%	15x15
Puncture	ASTM D4833	lbs.	125
Mullen Burst	ASTM D3786	psi	650
Trapezoid Tear	ASTM D4533	lbs	120x150
UV Resistance	ASTM D4355	%	90
Apparent Opening	ASTM D4751	US Sieve	40
Flow Rate	ASTM D4491	gal/min/ft ²	40
Permittivity	ASTM D4491	sec -1	0.55

PART 3 – EXECUTION

3.01 GENERAL

- A. Undertake reasonable precaution to avoid erosion of soil and to prevent silting of drainage ditches, storm sewers, rivers, streams, and lakes.
- B. 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. Coordinate temporary erosion controls with permanent erosion controls to the extent practical.
- C. Employ pollution prevention measures, erosion and sedimentation control, before, during and after soils are exposed. Prior to soil disturbance or soil storage, ensure measures are in place before activity occurs. Employ additional measures as the Work progresses. Implement and maintain erosion and sedimentation control measures as necessary until the Site is permanently stabilized.

- D. Provide measures to control dust caused whether on or off the Project Site.
- E. Keep exposure of soils on embankments, excavations, and graded areas to as short a duration as possible. Initiate mulching, seeding and other temporary erosion control practices as specified.
- F. Install erosion control measures in any ditch, swale or channel before runoff is allowed to flow to the waterway.
- G. Dewater trench to install materials in the dry.
- H. Contain water pumped from trenches and excavations. Do not discharge trench dewatering and pipe dewatering to the waterway.
- I. Employ the use of siltation control devices at all times to prevent runoff from entering waterway.
- J. 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 except where construction activities will resume on the particular portion of the Site within 21 days; and where snow cover precludes initiation of stabilization measures.
- K. 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.
- L. Control dust in accordance with Division 01 General Requirements. Utilize the application of sprinkled water and calcium chloride to reduce the emission of air-borne soil particulates from the Site.

3.02 PREPARATION

- A. Temporary Erosion Control Matting
 - 1. Conform to grades and cross sections for slopes and ditches shown on the Drawings.
 - 2. Finish to a smooth and even condition with all debris, roots, stones, and lumps raked out and removed.
 - 3. Apply seed prior to placement unless otherwise directed.
 - 4. Dewater trenches and swales to install materials in the dry.

3.03 INSTALLATION

A. Mulch Sock/Tube

1. Install compost filter tubes, also referred to as sedimentation barriers consisting of a 18 inch diameter filter tube filled with approved mulch and compost materials.
2. Undertake immediately after each area has been properly prepared.
3. Fill sedimentation barriers by truck mounted blowers with an adequate volume of material to provide a firm barrier that slumps not more than 20 percent of the height measured in place. Fill tubes of compost on or off Site. Place, fill and stake tubes in place to ensure stability against water flows and tamp to ensure good contact with soil.
4. Hay mulch should cover the ground enough to shade it, but should not be so thick that a person standing cannot see ground through the mulch.
5. Remove matted mulch or bunches.
6. Install sedimentation barriers in the locations shown on Drawings and as directed by Engineer. Install in continuous lengths not to exceed 100 feet. Shorter lengths may be used as needed to finish a line of barrier, but not be shorter than 10 feet.
7. Overlap barrier sections not less than 2 feet at section ends, with the ends pressed firmly together. Stake section ends with the fabric ends tied off.
8. Drive stakes into the existing grade not less than 1 foot, spaced at a minimum of 10 feet on center. Provide additional stakes as needed for the ends of each section and for overlapping sections.

B. Erosion Control Matting

1. Install erosion control mat and straw mulch in accordance with manufacturer's instructions and the following where shown on Drawings or as directed by Engineer. Submit manufacturer's instructions to Engineer prior to installation. Place immediately following seeding.
2. Install an erosion control matting onto slopes that have been graded, seeded, completed to required line and where grades are steeper than or equal to 3:1 as shown on the Drawings and directed by Engineer.
3. Place strips lengthwise in the direction of the flow of water.
4. Overlap ends at least 3 inches in a shingle fashion.
5. Turn down up-slope end of each strip of the matting and bury to a depth of not less than 6 inches with the soil firmly tamped against it.

6. Engineer may require that any other edge exposed to more than normal flow of water be buried in a similar manner.
 7. Build check slots at right angles to the direction of the flow of water. Space so that one check slot or one end occurs within each 50 feet of slope length. Construct by placing a tight fold of the matting at least 6 inches vertically into the ground, and tamp the same as up-slope ends.
 8. When ordered, spread additional seed over matting, particularly at those locations disturbed by building the slots. Press matting onto the ground with a light lawn roller or by other satisfactory means.
 9. Use pine wedges to fasten coir to ground. Do not use metal staples. Pound vertically flush to the surrounding surface and shall not protrude above finished grade. Place pine wedges in the same locations as manufacturer recommended staple locations.
 10. On grades 4:1 or steeper, place pine wedges in the same 3 rows, but spaced 2 feet apart.
 11. On overlapping or butting edges, double the number of pine wedges, with the spacing halved; secure ends of matting and required check slots spaced every foot.
 12. In combination with the erosion control blanket, apply weed free straw mulch on side slopes steeper than 3:1.
 13. Place mulch according to MassDOT 767. Do not use short fibered material or material which is so wet or decayed that it cannot be properly spread. Apply tackifier as needed.
- C. Sod
1. 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.
 2. Staple sod strips at ends and at 3-foot intervals along the center of the strip.
 3. Irrigate sodded area immediately after installation.
- D. Temporary Seeding
1. Seed with appropriate seeds and application rates specified in the table in Part 2 of this Section. Sow seed at the rate 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 at that time.
 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.
- E. Topsoil Storage
1. Place topsoil which is stockpiled on the site for use in loam applications out of natural drainages, in 8 foot high piles which have side slopes of 50 percent to 70 percent.
 2. Install siltation fence around the base of the pile to prevent eroding soil from washing into drainages.
 3. Cover any topsoil piles which are to remain for a period of 21 days or more with temporary seed and mulch immediately following stockpiling.
- F. Stone Check Dam
1. Place in locations indicated on Drawings or as ordered to provide for temporary control of erosion and sedimentation.
 2. Install as directed by the local Conservation Commission and Engineer.
- G. Hay Bales
1. Place as ordered to provide for temporary control of erosion, and in ditches at 100 foot minimum intervals.
 2. Install as shown on Drawings, and stake with required stakes.
- H. Siltation Control Devices – Silt Sacks
1. Install in accordance with the Drawings and manufacturer's instructions. Install Inlet Protection (Silt Sacks) in catch basins and as required by the Engineer.
 2. Keep silt sacks in place until the placement of the pavement overlay or top course and the graded areas have become permanently stabilized by vegetative growth.
 3. Install prior to commencement of any excavation including but not limited to, cold planning, pavement reclamation, or unclassified excavation.

- I. Silt Curtain
 - 1. Install silt curtain filter material in accordance with the Drawings and prior to commencement of any excavation including but not limited to, cold planning, pavement reclamation, or unclassified excavation.
 - 2. Keep silt curtain in place until removal is approved by the Engineer in accordance with water quality monitoring.
- J. Other Temporary Measures
 - 1. Provide and maintain temporary slope drains as required.
 - 2. Employ other temporary erosion control measures as directed by the Engineer or local Conservation Commission.

3.04 FIELD QUALITY CONTROL

- A. Site/Field Tests and Inspections
 - 1. Inspect erosion control practices immediately after each rainfall and at least daily during prolonged rainfall or snowmelt for damage. Make appropriate repairs or replacement at no additional cost to the Owner, until acceptance by Engineer.

3.05 MAINTENANCE

- A. Maintain areas mulched or matted, at no additional cost to the Owner, until Project acceptance.
- B. Maintain detention basins by removing silt that reaches a depth of over 1 foot, at no additional cost to the Owner, until Project acceptance.
- C. Maintain sedimentation barrier and periodically inspect barrier lines during construction. Remove accumulated sediment higher than 1/2 the height of the barrier, or before a major storm event and as directed by the Engineer.
- D. Remove silt from silt sack when it has reached one-half the fence height, or prior to expected heavy runoff or siltation.
- E. Repair matting if any pine anchors become loosened or raised, or if any matting becomes loose, torn, or undermined, make satisfactory repairs immediately.

- F. Inspect filter tubes after each rainfall and at least daily during prolonged rainfall. Immediately correct deficiencies, including, but not limited, to washout, overtopping, clogging due to sediment, and erosion. Review location of tubes in areas where construction activity causes drainage runoff to ensure that the tubes are properly located for effectiveness. Maintain the functional integrity of filter tubes in sound condition at all times. Where deficiencies exist, such as overtopping or wash-out, install additional staking or compost material as directed by the Engineer. Remove sediment deposits as necessary to maintain the filters in working condition. Repair or replace filter tubes that are decomposing, cut, or otherwise compromised.
- G. Inspect condition of silt sacks after each rainstorm and during major rain events and clean periodically to remove accumulated sediment and debris. Handle and dispose of debris accumulated in silt sacks. Repair or replace damaged silt sacks.
- H. Periodically inspect and empty the silt curtain and as directed. Dispose of removed material off Site. Inspect the condition of silt curtain after each rainstorm and during major rain events. Repair and replace damaged silt curtain at no additional cost to Owner.

3.06 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Division 01 General Requirements.
- B. Remove temporary materials and devices when permanent soil stabilization has been achieved and approved by the Agawam Conservation Commission. Re-use materials in good condition if approved by the Engineer.
- C. Remove filter fabric from the Site at completion of the Project.
- D. Remove sedimentation barrier including removal of sediment accumulated at the barrier line, stakes and the barrier and the compost fill. Do not remove before a major storm event or as directed by Engineer. Finish final grade below and around the sedimentation barrier to match the existing grade.
- E. Level and grade 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.
- F. Remove and legally dispose of unsuitable materials from Site.

END OF SECTION

SECTION 01 57 30

TEMPORARY WATER BYPASS

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Provide, test, operate and maintain temporary water bypass system. Temporary water bypass system is intended to maintain fire protection and water service impacted by the Project until permanent water service and fire protection is restored.
2. Disinfect and test temporary bypass system in accordance with requirements of AWWA C651 prior to placing into service and after repairs. Operate and maintain system until permanent water service and fire protection is restored.
3. Provide public notification as specified in Section 01 11 00. At a minimum, provide notification to customers 48 hours prior to connection to or disconnection from temporary bypass system. Include emergency contact information in all notices.
4. Provide temporary valves, temporary hydrants, and temporary subsurface connections.
5. Provide temporary fire and domestic service connections, including subsurface connections, and service hoses, including wye connections at hose bibbs, for each property requiring a temporary domestic or fire service. Close valve at meter prior to activating temporary domestic service connection.
6. Provide temporary hydrant for each fire department connection (FDC).

7. Bury temporary bypass water system at roadway crossings, pedestrian ramps, driveway crossings as specified, and areas required by Owner or Engineer to protect the temporary bypass system from damage and maintain public safety.
8. Provide temporary and permanent hot-mix asphalt in accordance with Section 32 12 16 for all temporary bypass water main system trenches.

B. Related Requirements

1. Section 32 12 16 – Asphalt Paving

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
 - b. ANSI/NSF 372 – Drinking Water Components – Lead Content
2. American Water Works Association (AWWA)
 - a. AWWA C504 – Rubber-Seated Butterfly Valves
 - b. AWWA C651 – Disinfecting Water Mains
 - c. AWWA C800 – Underground Service Line Valves and Fittings
 - d. AWWA C901 - Polyethylene (PE) Pressure Pipe and Tubing, ¾ In. (19 mm) Through 3 In. (76 mm), for Water Service
 - e. AWWA C906 – Polyethylene (PE) Pressure Pipe and Fittings, 4 In. Through 65 In. (100 mm Through 1,650 mm) for Waterworks
3. ASTM International (ASTM)
 - a. ASTM A53 – Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
 - b. ASTM A183 – Standard Specification for Carbon Steel Track Bolts and Nuts
 - c. ASTM A449 – Standard Specification for Hex Cap Screws, Bolts and Studs, Steel, Heat Treated, 120/105/90 ksi Minimum Tensile Strength, General Use
 - d. ASTM A536 – Standard Specification for Ductile Iron Castings
 - e. ASTM B62 – Standard Specification for Composition Bronze or Ounce Metal Castings

- f. ASTM B584 – Standard Specification for Copper Alloy Sand Castings for General Applications
 - g. ASTM D2737 – Standard Specification for Polyethylene (PE) Plastic Tubing
 - h. ASTM D3350 – Standard Specification for Polyethylene Plastics Pipe and Fittings Materials
 - i. ASTM F714 – Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Outside Diameter
 - j. ASTM F1055 – Standard Specification for Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene and Crosslinked Polyethylene (PEX) Pipe and Tubing
- 4. Factory Mutual (FM)
 - 5. 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 for installation of temporary water bypass system. Submit any modifications to bypass system shown on Drawings at least 14 days prior to beginning Work for review and approval by Owner and Engineer.

2. Minimum requirements for bypass plan and schedule:

Revisions to the temporary water bypass system shown on the Drawings including connections to existing hydrants, temporary subsurface connections to existing water mains and domestic and fire services, street crossings, existing valves to be operated, and location of temporary hydrants, temporary valves, and temporary water bypass sampling locations.

- a. Description of connection procedures for domestic services, details and a description of installation procedures for subsurface connections to existing mains and fire services, including thrust restraint, and disinfection procedures
- b. Daily schedule outlining the locations where temporary water mains will be installed and notification procedures for business owners and residents

3. Emergency Contact List: include name, address, home and mobile telephone numbers of at least 3 Contractor employed personnel, qualified to work on municipal water distribution systems and skilled in the operation, maintenance and repair of the temporary water bypass system in use.

- a. Each contact must be familiar with the temporary water bypass system in use, with specific knowledge of its operation and maintenance requirements and valve locations
- b. Each contact must be available 24 hours per day, 7 days per week, and able to respond to emergency repair calls within a maximum of 2 hours.

4. Written notice informing water customers of temporary bypass system installation and connection and disconnection process, including emergency contact information.

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. Provide high density polyethylene (HDPE) or galvanized steel pipe with watertight joints capable of withstanding whatever forces, including traffic loads, they will encounter.
1. Pipe:
 - a. High density polyethylene (HDPE) pipe: good condition; manufactured from high density, extra high molecular weight compound equaling a PE 3408 or PE 4710 designation and conforming to ASTM D1248 and ASTM D3350, with a cell classification of 345434C; comply with ANSI/NSF 61 and ANSI/NSF 372.
 - b. Hot dipped galvanized steel pipe: schedule 10 or greater, in good condition; manufactured to meet the requirements of ASTM A53, UL listed, FM approved; comply with ANSI/NSF 61 and ANSI/NSF 372.
 - c. Other pipe materials: not permitted for the temporary bypass water system.
 2. Working pressure: minimum 200 psi.
 3. Minimum wall thickness:

Diameter	HDPE (in.)	Galvanized Steel (in.)
6-inch	0.736	0.134
4-inch	0.500	0.120
2-inch	0.264	0.109

4. Fittings and Couplings: restrained grooved joint design or approved equal; ductile iron conforming to ASTM A536; comply with ANSI/NSF 61 and ANSI/NSF 372; designed to resist flexure and torsion loads; UL listed, FM approved; minimum 300 psi working pressure; EPDM gaskets; heat-treated, plated carbon steel, trackhead bolts and nuts complying with ASTM A449 and ASTM A183.

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 ANSI/NSF 372 and bearing the imprint of the National Sanitary Foundation approval for potable water (NSF-PW).

2.03 TEMPORARY HYDRANTS AND VALVES

- A. Temporary hydrants: ductile iron conforming to ASTM A536; comply with ANSI/NSF 61 and ANSI/NSF 372; 4-1/2-inch pumper nozzle; acceptable to and supported by means approved by the local Fire Department to prevent deflection of the hydrant or bypass piping system when the hydrant is in operation.
- B. Temporary valves: watertight, butterfly, rubber seat type; operating nut controlled by standard wrench; arrow indicating open direction; comply with ANSI/NSF 61 and ANSI/NSF 372. Temporary valve shall be same diameter as bypass pipe it is connected to.

PART 3 – EXECUTION

3.01 GENERAL

- A. Provide temporary water bypass system. Submit modifications to the temporary water bypass system in accordance with Article 1.05 prior to beginning any Work on the Project.
- B. Install, test and put temporary water main bypass system, including temporary hydrants, temporary valves, domestic and fire service connections, subsurface connections, service blow backs and permanent gate valves required to isolate existing distribution system in service prior to beginning water main construction.
- C. Coordinate and schedule installation, testing and removal of temporary bypass water main system to prevent interruption of water service or fire protection. Interruption of water service or fire protection shall be permitted when connecting and disconnecting services to temporary bypass system, unless otherwise noted on the Drawings. No other interruptions of water service or fire protection shall be permitted.
 - 1. As a minimum, connect temporary bypass water mains to the existing distribution system at both ends to maintain continuity in the distribution system. “Dead-ending” of the temporary water bypass system is not permitted.
 - 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 assure continuous water service and fire protection.
 - 3. Test and place temporary bypass system in service prior to terminating service to existing water mains.
- D. Provide, maintain, and remove service hoses of approved size, to service all customers from valve connections on the bypass pipe.
- E. Provide separate temporary service connections for each domestic and fire service. Directly connecting one building to another is prohibited.

- F. Meet the following minimum requirements when temporary bypass system is not shown on Drawings or Contractor proposes modifications to bypass system shown.
1. Temporary bypass for fire service: as required by the Fire Department.
 2. Temporary bypass for domestic service: minimum 2 inches in diameter.
 3. Temporary hydrants: Provide for each existing and proposed hydrant and at buildings with FDC. Provide additional temporary hydrants when required by the local Fire Department at no additional cost to the Owner.
 4. Temporary valves: Provide watertight temporary butterfly valves at hydrant connections, subsurface connections, branch lines to provide 3-way control, and at 800 linear foot increments along main. Provide additional temporary valves when directed at no additional cost to the Owner.
 5. Temporary bypass system feeds: At a minimum, connect fire protection main at each end of bypass system to existing mains that will remain in service. Provide additional fire protection main connections, when directed, at no additional cost to Owner. Provide temporary hydrant and valve at hydrant connection feeding temporary fire main. Locate temporary valve after temporary hydrant to ensure temporary hydrant remains live when temporary valve is closed.

6. Temporary service connections
 - a. Fire service: off fire protection main. Provide fire service connection of same diameter as existing service but in no case less than 4-inch connection.
 - b. Domestic service: minimum 3/4-inch diameter as specified in Article 2.02.
- G. Contact local Fire District Chief and Fire Alarm in writing prior to installation of temporary water bypass system. Schedule site visit with District Chief to review system. Review District Chief comments with Engineer and make modifications required. Provide copy of notice to Fire District Chief and Fire Alarm to Owner and Engineer.
- H. Minimize inconvenience to businesses, property owners and water customers during connection and disconnection. Provide public notification as specified in Section 01 11 00 and this section.

3.02 PIPING

- A. Provide water tight temporary bypass system. Exercise care throughout the installation of the temporary mains and service connections to avoid possible contamination of water mains or house services or contamination of the temporary bypass pipe itself. Flush, disinfect and test all temporary mains and services to prevent contamination in accordance with Section 33 01 10.58 and AWWA C651.
- B. Lay temporary piping along curb or at back of sidewalks in a manner that protects public health and safety, minimizes disruption to vehicular and pedestrian traffic, and avoids damage to temporary bypass system. Bury all bypass piping at road crossings and accessible ramps. Unless otherwise required by Owner, ramp 4-inch or smaller bypass piping with gravel, cold patch, or other approved material at driveways and sidewalks in a manner that will protect pipe, prevent erosion or migration of ramping material, maintain public health and safety, and avoid damage to vehicles, disruption of traffic, or trip hazards to pedestrians. Bury bypass piping greater than 4 inches in diameter at driveway and sidewalk crossings. Pave bypass trench with hot-mix asphalt. Ensure bypass trench pavement is flush with existing pavements.
 1. Take additional precautions to minimize public inconvenience in areas where bypass pipe or service hoses may be considered an obstruction to safe passage. Additional precautions may include, but are not limited to, providing additional ramping, cold patch, or burying bypass pipe and service hoses as directed by Owner or Engineer.

2. Cut narrow trench to bury bypass at roadway crossings, accessible ramps, driveways, sidewalk crossings and other areas deemed necessary by Owner or Engineer. Trench shall be cut with enough width and depth to allow placement of the bypass pipe and 2-inches of hot-mix asphalt pavement patch. Place temporary hot-mix asphalt pavement patch and compact in accordance with Section 32 12 16. Compaction of hot-mix asphalt pavement patch or cold patch used in ramping by vehicular traffic is prohibited.

3.03 OPERATION AND MAINTENANCE

- A. Maintain temporary bypass system 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 40 degrees Fahrenheit. Maintain all components of the 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, disinfect, test, and return the temporary bypass system to service at no additional cost to the Owner.

3.04 REMOVAL

- A. Remove temporary bypass system after placing new water main, hydrants and services in service. Remove all bypass pipe and hoses, saw cut neat, straight edges for bypass trenches, backfill bypass trenches with gravel and compact in accordance with Section 31 00 00. Provide permanent hot-mix asphalt pavement patch in accordance with Drawings.

END OF SECTION

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SECTION 01 57 35

TEMPORARY STREAM BYPASS

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. Furnish, install, and maintain temporary measures for White Brook flow bypass, including, but not limited to, cofferdams, sandbags, temporary bypass piping, and pumping.

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination, sequencing, and scheduling: in accordance with Division 01 General Requirements.

1.04 SUBMITTALS

- A. Submit in accordance with Division 01 General Requirements.
 - 1. Bypass Pumping Plan for each bypass location to Engineer and Owner 2 weeks prior to bypassing stamped by a professional engineer registered in the state where Project is located.
 - 2. Bypass Pumping Plan must contain at a minimum:
 - a. Standard Operating Procedure: describe the normal sequence of events to be followed while setting up, pumping, and breaking down pumping equipment. Plan must address strategies and safeguards to ensure that public safety and environmental health is constantly maintained, the possibility of property damage and wetlands impacts, and overall level of inconvenience is minimized.
 - b. A bypass routing diagram including pump location for each Work zone.
 - c. Calculations estimates of anticipated peak flows, pump rates, pump curves, and other relevant design. Determine bypass pumping capacity for individual pipe section replacement.
 - 3. Provide design and maintenance of the cofferdam. Submit cofferdam design as part of the dewatering plan as needed.
 - 4. List of equipment to be used during normal pumping operation

5. Emergency Response Plan: describe the intended means of handling the following situations, include both response and clean-up measures. List equipment to be used and where it will be stored in case of emergency:
 - a. Break or failure of bypass line (pipe)
 - b. Failure of bypass pump
 - c. Overflow
 - d. Back up into dwelling or onto private property
 - e. Failure of bypass pumping system to accommodate flow.
- B. Shop Drawings
 1. Pumps
 2. Pipe or hose
 3. Joints/couplings
 4. Plugs and/or bladders

1.05 SITE CONDITIONS

- A. Existing conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 PUMPS, PIPES & FITTINGS

- A. Pump: suitable for usage with storm drainage and capable of conveying the volume of flow anticipated with a sufficient margin of safety. Provide for 100 percent redundancy (provide 2 pumps for every 1 pump required) if flow cannot be returned to the storm drain at any time if pumping system failure occurs. Include suction and discharge piping and quick connect couplings to facilitate change out of pumps.
- B. Pipe and fittings: constructed of carbon steel, or fused high-density polyethylene pipe or approved equal. Provide quick-disconnect type fittings.
- C. Lay flat hose: extra heavy duty, highly abrasion resistant and fitted with gasketed couplings. Hose rating: 150 percent of working pressure.
- D. Provide a temporary enclosure for the bypass pumping system for sound attenuation operating outside of regular working hours meeting state and local Laws and Regulations for noise requirements.

PART 3 – EXECUTION

3.01 GENERAL

- A. Adequately bypass flow around the affected section of the Work, even instantaneous peak flows, without damage or overflow. Be aware of potential large instantaneous flow contributors connected to the storm drain under repair.
- B. Continuously monitor bypass operations regardless of duration or timing of bypassing.
- C. Monitor ongoing and future weather conditions for the duration of construction and adjust and/or remove the bypass measures as needed to avoid property damage, wetland impacts and risks to public health and safety.
- D. Coordinate bypassing with low-flow times, to the extent feasible. Ensure no overflows or backups occur.
- E. Temporary damming of waterways is not allowed.
- F. If it is determined that bypass pumping is not required at a location due to lack of flow or that a Work item does not require bypass pumping to be performed, and the decision is agreed upon by the Engineer, provide protection of flows from any construction debris and ensure that no debris enters the storm drain system.
- G. Bypass Pumping
 - 1. Bypass storm drain pumping: a typical manhole to manhole or catch basin to manhole bypass pumping setup.
 - 2. Submit a bypass plan to Engineer prior to implementation of such Work and prior to the start of construction.
- H. Restore normal service to entire system at the end of normal working hours every day or post an attendant on Site.
- I. Repair any damage that occurs to existing pipes and structures to the satisfaction of the Engineer.
- J. Temporary Bypass will be considered incidental to the Work to be performed, unless otherwise indicated.

3.02 FLOW DATA

- A. Flows and flow data are variable depending on location, weather conditions and tides. Visiting areas of the Site prior to Work to visually inspect flow conditions is encouraged. Maintain flows as specified under all flow conditions.

- B. Portions of the Project area are subject to groundwater inflow. Account for groundwater infiltration in the planning and conducting the Work.

3.03 TEMPORARY POWER

- A. Provide fuel and/or power to run pumps associated with the bypass at no additional cost to the Owner. Include emergency backup power or backup fuel storage as part of the Bypass Pumping Plan.

3.04 PIPING

- A. Lay temporary piping along the general lines of the street in a manner that causes the minimum amount of disruption and is least likely to be damaged. Make provisions at driveways, provisions to permit property owners to drive over the temporary pipe by use of temporary bituminous pavement, cold patch, or other approved material to form a ramp on each side of the pipe to the satisfaction of the Engineer or by depressing the pipe as directed by the Engineer.

3.05 OPERATION AND MAINTENANCE

- A. Constantly attend the bypass system. Provide an attendant if bypass pumping must continue beyond working hours.

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. This Section applies to all Specifications and Drawings and provisions of this Section may be supplemented in other sections of Division 01.
- B. Certain provisions required by Laws and Regulations may be referenced. Contractor is responsible to determine and obtain applicable Laws and Regulations and to review and interpret the full text of such Laws and Regulations.
- C. Section Includes

1.02 SOURCE QUALITY CONTROL

- General
- Independent Testing Agency Certification
- Factory Testing

1.03 PRODUCT REQUIREMENTS

- General
- Transportation 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 need 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

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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. This Section applies to all Specifications and Drawings and provisions of this Section may be supplemented in other sections of Division 01.
- B. Certain provisions required by Laws and Regulations may be referenced. Contractor is responsible to determine and obtain applicable Laws and Regulations and to review and interpret the full text of such Laws and Regulations.
- C. Section Includes

1.02 OVERALL EXECUTION REQUIREMENTS

- Coordination
- Existing Conditions
- Field Engineering
- Cutting and Patching
- Electrolytic Corrosion Prevention
- Quality Assurance and Control of Installation
- Manufacturers' Field Services
- Independent Testing
- Record Documents

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

1.04 CLOSEOUT REQUIREMENTS

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.
 - a. Comply with working hours specified in Section 00 73 10.
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.
9. Specific requirements applicable to the Project include the following.
 - a. Coordinate with the Conservation Commission prior to start of Work per the Order of Conditions included in Section 00 31 00.

B. Existing Conditions

1. Paragraph 4.01 of the Standard General and Supplementary Conditions, if any, covers Availability of Lands.
2. Paragraph 4.02 of the Standard General and Supplementary Conditions, if any, covers Subsurface and Physical Conditions.

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.
 - c. Contact DIGSAFE at www.digsafe.com or by dialing 811.
 4. Paragraph 4.05 of the Standard General and Supplementary Conditions, if any, covers Reference Points.
 5. Paragraph 4.06 of the Standard General and Supplementary Conditions, if any, covers Hazardous Environmental Conditions at Site.
- C. Field Engineering: as specified below.
1. Prior to initiating construction, engage an independent professional land surveyor registered in the state where the Project is located to provide surveys and permanent reference points for all bounds and property markers along the line of the Work that may be disturbed during construction. Submit copies of all ties to the bounds and property markers to the Engineer prior to excavation at the Site(s).
 2. Maintain surveyor's log of control and other survey work. Keep log available for reference.
 3. Verify layout information shown on the Drawings in relation to existing benchmarks before lay out of the Work. Locate and protect existing benchmarks and control points. Preserve permanent reference points during construction.
 4. Promptly report lost or destroyed reference points, benchmarks, or control points. Promptly report requirements relocate reference and control points due to changes in grades. Promptly replace lost or destroyed bounds or markers and control points based on the original survey control points utilizing the services of a professional land surveyor registered in the state where the Project is located. The cost of replacing markers disturbed by the Contractor's operations shall be at the Contractor's expense.

D. 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.

E. 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.

F. 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 6.13 of the Standard General and Supplementary Conditions, if any.

G. 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.

H. 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.

I. 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 Section 01 15 30.

1.03 CLOSEOUT REQUIREMENTS

- A. 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.
1. Work is complete, systems are successfully operating, and final testing has been successfully completed.

2. A full inventory of the spare parts and special tools purchased by the Owner are replenished and in the custody of the Owner.
 3. The Site has been restored to the satisfaction of the Owner.
 4. An inspection of the Work has been completed by the Engineer and the Owner.
 5. An updated Punch List is provided.
 6. The Contractor's written warranty and guarantee has been submitted as required by Paragraph 6.19.D. of the Standard General and Supplementary Conditions, if any.
 7. A Certificate of Substantial Completion has been provided in accordance with Paragraph 14.04.C. of the Standard General and Supplementary Conditions, if any.
- B. 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.
- C. 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.
- D. 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.
1. Substantial Completion has been achieved and liquidated damages for failure to meet Substantial Completion Date have been paid.
 2. All Work including Punch List Items has been completed.
 3. Final cleaning has been conducted and Contractor equipment and supplies including waste materials have been removed from the Site and legally disposed of.
 4. A full set of record documents have been submitted as specified in subparagraph 1.02.I. above and Contractor's written warranty and guarantee has been resubmitted if adjusted.
 5. Inspections required by Laws and Regulations are complete. Certificates and permits to occupy and operate have been issued if required.

6. Spare parts, maintenance and extra materials have been delivered in quantities specified to Project Site and stored as directed.
7. 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.
8. 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.

END OF SECTION

SECTION 02 41 14

SELECTIVE SITE DEMOLITION AND RESTORATION

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Provide Site demolition including clearing, stripping or ordinary excavation of existing bituminous or cement concrete pavements, soils, foundations, bituminous or cement concrete curbs, bituminous or cement concrete sidewalks, grassed areas, demolition, dismantling, replacement and restoration Work, stacking of reusable and disposal of waste and surplus materials and tree protection and removal in accordance with this Section and applicable reference standards listed in Article 1.03.

B. Related Requirements

1. Section 31 00 00 – Earthwork
2. Section 31 10 00 – Site Clearing
3. Section 32 12 16 – Asphalt Paving

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Reference Standards

1. MassDOT
 - a. Standard Specifications and Supplements and Construction Details

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. 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.

1.08 SITE CONDITIONS

- A. Existing conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 GENERAL

- A. Perform selective Site demolition in accordance with MassDOT Section 100.
- B. Comply with General Requirements for temporary construction controls, protections, and waste disposal.
 - 1. Ensure against damage or injury to buildings, occupants, and adjacent property from falling debris or other causes. Avoid damage to adjacent areas, facilities, and appurtenances.
 - 2. Maintain free and safe passage to and from Site.
 - 3. Legally dispose of waste, surplus and unsatisfactory materials including bituminous or cement concrete, debris, rails and ties, common excavation, cold planing, and reclamation immediately as it accumulates during clearing, grubbing, stripping, demolition, and other Site preparation. Burying is not allowed.

3.02 SITE DEMOLITION

- A. Clear Site of construction debris and waste materials, including grass, bushes, trees, broken concrete, fencing, pipes, lumber and steel pieces, rags and plastics, within limits of Work as shown on Drawings or as directed.
- B. Strip or excavate existing bituminous or cement concrete pavements, soils, foundations, bituminous or cement concrete curbs, bituminous or cement concrete sidewalks, and grassed areas.
- C. Remove, stack, store and protect field stone masonry wall sections to be reinstalled as necessary to construct drainage improvements or other parts of Work.

- D. Remove and stack fencing, lamp posts, letter boxes, signs, guardrails, bike racks, poles and other usable materials to be reinstalled.
- E. Demolish and remove existing bituminous pavement, bituminous and concrete walkways, curbing, grass borders and landscaping, bushes, shrubs and vegetation as necessary. Remove existing obstructions and debris, cut trees, bushes, root stumps, waste stones, wood, lumber, metal, plastic, and other unsuitable materials, above, at, or below grade that may interfere with or obstruct the Work, whether or not shown on Drawings.
- F. Remove and stockpile top soil, curb stones, utility castings and other materials for reuse as shown or directed by Engineer.
- G. Stockpile recovered materials acceptable to Engineer to be reused on Project and protect against damage or deterioration.
- H. Do not cut, remove, destroy, or trim trees and shrubs unless specifically marked or permitted. Do not remove tree branches using excavating equipment. Provide that required trimming is performed by an arborist licensed in the state of Massachusetts.
 - 1. Protect trees or vegetation outside limits of Work area.
 - 2. Tree Removal (4-48 inches in diameter)
 - a. Cut existing trees and expose by excavation, remove or cut, as required, tree stumps and root systems as shown on Drawings and as directed. Remove and legally dispose of tree stumps, roots, organic matter and unsuitable materials.
 - b. Excavation around tree not to exceed the required limit of work.
 - c. Depth of excavation for stump removal not to exceed 5 feet.
 - d. Depth of excavation for removal of tree root system not to exceed 2 feet.
 - e. Cut clean and remove root system encountered within limits of excavation required to construct the Project and width as determined by Engineer. Paint cut surfaces of remaining detached roots with stump rot. Clean and paint tree roots still attached to trunk with 2 coats of approved chemical root guard.
- I. Protect integrity of remaining structures, appurtenances and equipment during demolition, removal and alteration to existing structures, appurtenances, utility pipes, castings, fences, walkways, posts, stairs and other physical features.

- J. Maintain slopes longitudinally and laterally to ensure proper and continuous drainage. Field adjust sidewalk and roadway gutter grades at driveways and side street intersections to be consistent with existing drainage pattern and provide for an appropriate transition between new and existing side streets and driveway pavement surfaces at intersections.
- K. If cobblestones are encountered, carefully stack excavated cobblestone.
- L. Cut sections of piping to be removed to nearest solid support or provide appropriate new supports and cap remaining ends before backfilling, unless noted on Drawings or directed by Engineer.
- M. Cut openings in existing masonry Work to provide for a suitable bond. Clean, square and plumb openings for installation of new Work. Thoroughly clean cut surfaces of loosened materials.

3.03 SAWCUTS IN EXISTING PAVEMENTS AND SIDEWALKS

- A. Neatly saw cut edges of excavations in existing pavements and sidewalks along either a straight line or design curved line as shown in Drawings. Ragged, uneven edges are not acceptable.
- B. Saw cut existing pavement through its full depth or to elevation of abutting pavement subgrade, whichever is less, at joints between existing and proposed pavements, and at utility trenches through existing remaining pavement. Provide a uniform, vertical surface for pavement joint with existing pavement.
- C. Neatly saw cut edges that become broken, ragged or undermined with minimum disturbance to remaining pavements or sidewalks, prior to placement of abutting pavement.
- D. Spray or paint saw cut surfaces with a uniform thin coat of M3.03.0 asphalt emulsion immediately before placement of hot mix asphalt material against surface.

3.04 REPAIR, REPLACEMENT AND RESTORATION

- A. Match materials of repair or restoration to existing adjacent surfaces in finish and texture as closely as possible. Make joints between new and existing Work inconspicuous.
- B. Replace or restore items damaged, dislocated or dismantled such as field stone masonry walls, fences, lamp posts, letter boxes, masonry boundary walls, City signs, poles, bollards, curb stones, markers, trees, bushes, grassed areas, walkways, stairs, steps, benches, outside lighting and other amenities and physical features designated to remain, to original condition.

3.05 FIELD QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.

3.06 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Division 01 General Requirements.

END OF SECTION

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SECTION 03 41 26

PRECAST CONCRETE STRUCTURES

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Provide materials, tools, and equipment to manufacture install and test precast concrete and precast concrete structures in accordance with this Section and applicable reference standards listed in Article 1.03 and as shown on Drawings.
 - 2. Field verify dimensions prior to fabrication.

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

- A. Reference Standards
 - 1. American Association of State Highway and Transportation Officials (AASHTO)
 - a. AASHTO HB-17 Standard Specifications for Highway Bridges
 - b. AASHTO T 111 Standard Method of Test for Mineral Matter or Ash in Asphalt Materials
 - 2. ASTM International (ASTM)
 - a. ASTM A615 Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
 - b. ASTM A1064 Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
 - c. ASTM C33 Standard Specification for Concrete Aggregates
 - d. ASTM C144 Standard Specification for Aggregate for Masonry Mortar
 - e. ASTM C150 Standard Specification for Portland Cement

- f. ASTM C207 Standard Specification for Hydrated Lime for Masonry Purposes
 - g. ASTM C260 Standard Specification for Air-Entraining Admixtures for Concrete
 - h. ASTM C494 Standard Specification for Chemical Admixtures for Concrete
 - i. ASTM C857 Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures
 - j. ASTM D113 Standard Test Method for Ductility of Asphalt Materials
 - k. ASTM D1227 Standard Specification for Emulsified Asphalt Used as a Protective Coating for Roofing
 - l. ASTM D217 Standard Test Methods for Cone Penetration of Lubricating Grease
 - m. ASTM D4 Standard Test Method for Bitumen Content
 - n. ASTM D6 Loss on Heating of Oil and Asphaltic Compounds
 - o. ASTM D71 Standard Test Method for Relative Density of Solid Pitch and Asphalt (Displacement Method)
3. Federal Specifications (FED)
- a. FED SS-S-210A Sealing Compound, Preformed Plastic, for Expansion Joints and Pipe Joints
4. Related Requirements
- a. Section 01 57 05 – Temporary Dewatering
 - b. Section 31 00 00 – Earthwork
 - c. Section 33 49 00 – Stormwater Structures

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. Shop Drawings
 - 1. Precast Concrete Structures, including construction details, dimensions, reinforcement, rebar placement, openings, wing walls/head walls, anchoring, etc. Drawings to show critical field dimensions identified by the manufacturer. Drawings to show locations and sizes of penetrations and related appurtenances.
- C. Product Data
 - 1. Provide manufacturer's descriptive data, technical literature, and catalog cuts. Product data shall also include catalog cut sheets and dimensional data for all precast structures and accessories. Include product data on joint sealants, anchorage hardware and related appurtenances.
 - 2. Joint Sealant
 - 3. Any other appurtenant data.
- D. Design Data
 - 1. Structural design calculations sealed by licensed engineer in the state where the Project is located, and submitted a minimum of 2 weeks prior to scheduled manufacture. These will be reviewed for consistency with Project intent.
 - 2. Buoyancy calculations sealed by a licensed engineer in the state where the Project is located, and submitted a minimum of 2 weeks prior to scheduled manufacture. These will be reviewed for consistency with Project intent.
- E. Closeout and maintenance material submittals: per Division 01 General Requirements.

1.06 QUALITY ASSURANCE

- A. Provide in accordance with Division 01 General Requirements.
- B. Materials are intended to be standard materials of proven ability manufactured by reputable concerns. Materials to be designed and constructed in accordance with Industry Practice, and installed according to manufacturer's recommendations.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Provide in accordance with Division 01 General Requirements.
- B. Ship, store and handle products in a manner consistent with manufacturer recommendations to not degrade quality, serviceability, and/or appearance. Remove any unit found to be defective, either before or after installation, from the Project Site and replace with a sound unit.

1.08 SITE CONDITIONS

- A. Existing conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 PRECAST CONCRETE STRUCTURES

A. General

1. Provide precast structures with exterior dimensions shown on Drawings.
2. The quality of materials, the process of manufacture and the finished sections shall be subject to inspection by the Engineer.
3. Where required, preformed joint filler shall be glued to the concrete surface by means of an adhesive in accordance with the manufacturer's recommendations. The adhesive shall be in accordance with AASHTO-M220.
4. Make areas to be grouted indicated in Drawings with a non-shrinking, nonmetallic grout. Clean and roughen concrete surface; and keep continuously moist for 24 hours immediately prior to the application of grout to prevent flash setting. Grout shall be kept moist for a period of 7 days.

B. Precast Concrete

1. Concrete compressive strength shall be 5,000 psi (minimum) after 28 days.
2. Minimum concrete thickness shall be 6 inches.
3. Portland cement shall be Type II conforming to ASTM C150.
4. Fine aggregate shall consist of natural sand conforming to ASTM C33.
5. Coarse aggregate shall consist of 1/2-inch maximum, well-graded crushed stone conforming to ASTM C33.
6. Air entrainment admixture shall conform to ASTM C260. The air-entrained content shall be not less than 4 percent or greater than 7 percent.
7. A super plasticizer shall be used and shall conform to ASTM C494 Type F. Concrete shall be placed at a slump of between 5 and 8 inches.

C. Reinforcement

1. Wire fabric shall conform to the requirements of ASTM A1064.

2. Reinforcing bars shall be new billet steel, deformed, conforming to the requirements of ASTM A615, Grade 60.
3. Minimum clear concrete cover to reinforcement shall be 1-1/2 inches.

D. Design Loads

1. Vehicle Loads

- a. Except as otherwise specified, the design shall meet the requirements of AASHTO HB-17, including a HL-93 vehicle load.
- b. A lateral vehicle surcharge load of 125 psf shall be applied.

2. Lateral Pressure

- a. The equivalent lateral fluid pressure shall be 100 psf/lf below flood or design groundwater elevation, and 60 psf/lf above such elevation. The specified lateral vehicle surcharge load shall be added to this

3. Utility Structures Design Load

- a. Except where higher loads are specified, utility structures shall be designed for the loads prescribed in ASTM C857.

E. Joints

1. Concrete sections shall be provided with bell and spigot, or tongue-in-groove ends to ensure proper connection of the joints.

2. Each joint shall be sealed with a minimum of two rows of butyl rubber sealant. A compatible primer shall be applied as recommended by the manufacturer. Sealant shall be Conseal CS-102 (CS-202 when the temperature during installation is less than 30 degrees F) by Concrete Sealants, Inc., Kent Seal #2 by Hamilton Kent, Inc., Pro-Stik by Press-Seal Gasket Corporation, or approved equal, and shall be applied in accordance with the manufacturer's recommendations. Sealant properties shall be as follows

- a. Hydrocarbon Blend Content: 50 percent (minimum), per ASTM D4
- b. Inert Mineral Filler: 30 percent (minimum) by weight, per AASHTO T 111
- c. Volatile Matter: 2 percent (maximum) by weight, per ASTM D6
- d. Specific Gravity: 1.15-1.50, per ASTM D71
- e. Ductility: 5.0 (minimum), per ASTM D113

- f. Penetration Cone: 50-100 mm, per ASTM D217 at 77 degrees F, 150 gm. 5 Sec.
 - g. FED SS-S-210A: No deterioration, no cracking and no swelling after 30 days immersion in 5% solutions of HCl, H₂SO₄, NaOH, KOH, and H₂S
- F. Finish
- 1. Where noted on the Drawings, exposed vertical faces of precast concrete walls shall be finished with an architectural surface treatment reviewed and approved by the Owner.

2.02 DAMPPROOFING

- A. Provide a two-coat bituminous damp-proofing (water sealing) system for all precast structures. All exterior coatings shall conform to ASTM D1227 and ASTM D1187 standards. Concrete sealants shall be designed for use both above and below grade. Dampproofing shall be Hydrocide 700 Mastic as made by Sonneborn, Karnak 920 Anti Hydro Mastic Emulsion, or approved equal, conforming to ASTM D1227.

2.03 PIPE CONNECTIONS

- A. Pre-molded elastomeric sealed joints shall be used at the joints between the pipe and precast sections. Pre-molded elastomeric sealed joints shall be A-Lok, Res-Seal, Press-Wedge II, Lock Joints Flexible Manhole Sleeve, Kor-N-Seal Joint Sleeve, or equal.

2.04 MORTAR

- A. Mortar shall be composed of one part portland cement and 2 parts sand with 20 percent hydrated lime.
- B. Portland cement shall conform to ASTM C150. Sand shall conform to ASTM C144. Hydrated lime shall conform to ASTM C207.

2.05 ANCHORAGE HARDWARE

- A. Hardware for fastening the precast structure to fasten precast segments together for buoyancy shall be stainless steel.

2.06 SOURCE QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.

PART 3 – EXECUTION

3.01 PRECAST STRUCTURES

1. Precast structures shall be installed as shown on Drawings. Precast sections shall be installed so that the entire structure is vertically plumb and aligned, and when not so, shall be removed and reset. All erection holes and/or lift pin holds shall be filled solid with non-shrink grout. Furnish and use suitable slings, hooks, and cables for the proper handling of the sections. All anchoring and fastening devices shall be provided by the manufacturer for the proper and satisfactory installation of the units.
2. Manufacturer to supply all specific lifting devices for each piece to the successful installation contractor if needed on a temporary basis. The specific lifting devices shall be returned with the manufacturer representative that oversees the installation work for compliance.
3. No cracked, warped, or broken units, or units in the opinion of Owner or Engineer, that show defects that might adversely affect the serviceability of the units, may be used in the Work. Remove defective units from the Site and replace with new and sound units at no additional expense to Owner. Any additional costs associated with replacement of units as described in this section shall be the manufacturers responsibility to pay all costs associated with replacement of said units.
4. Joints between precast sections and units shall be made in an approved manner to guarantee a leak-proof, watertight joint. Joint designs incorporating O-rings and cement grout will not be accepted. Joint filler shall be provided as required and joint sealant shall be installed on both the interior and exterior sides of the joints. The joints between all units shall be covered with a preformed sheet membrane, in accordance with Section M9.08.0 of the MHD Standard Specifications.
5. Where patching is permitted by the Owner and Engineer, the patches shall be made using the same material as used in the unit being patched and using a 2-part epoxy compound of a type to produce a proper bonding of the patch to the units.
6. Patching required due to damage during offloading staging or installation.
7. Patching of imperfections at the plant by the manufacturer requires Owner's and Engineer's approval before unit is shipped from manufacturer's plant.
8. The engineer reserves the right to reject any precast sections and the rejected units shall be tagged and removed from the Site immediately. Engineer may also require testing of concrete.
9. Packing, Shipping, Handling, and Unloading
 - 1) Provide that each shipment of precast concrete headwall includes manufacturers' Certificate of Conformance.

- 2) Inspect upon delivery and reject pipe immediately that does not conform to the specified requirements or has been damaged beyond repair and immediately remove from Site.
10. The manufacturer shall furnish at no additional expense to Owner, the services of the respective manufacturer's representatives of the precast concrete units, for such lengths of time as may be necessary to properly instruct personnel in the proper handling, installation, and jointing of the precast concrete units in accordance with the printed recommendations of the manufacturer. The manufacturer shall witness the complete installation of the headwalls and certify they have been installed in accordance with the manufacturer's recommendations for the supplied products and ancillary items.
11. Store, handle, protect and deliver precast concrete units by manufacturer to be installed and unloaded. The manufacturer shall be present to verify that all supplied units are installed in accordance with the printed recommendations of the manufacturer and in a manner to prevent overstressing, marring or damaging of the units. The manufacturer shall provide a written affidavit that they witnessed and approved the installation means and methods according to the manufacturer's recommendations.
12. Repair damage to existing utilities and properties adjacent to the proposed headwalls to satisfaction of Engineer.
13. The precast concrete headwall sections shall be shipped, handled, and installed in accordance with the manufacturer's recommendations. Unless otherwise directed by the Engineer, all precast concrete sections shall be installed in bedding material in accordance with the details as shown in the plans and in conformance with these specifications. The precast concrete headwalls shall be placed in the dry.

3.02 APPLICATION OF DAMPPROOFING

- A. Apply dampproofing in accordance with manufacturer's recommendations.
- B. Application is not permitted in spaces exposed to inclement weather or when air temperatures are below 40 degrees F, or are expected to go below 40 degrees F within 24 hours after application. Damp proofing can be applied to "green" or slightly damp surfaces only if permitted by the manufacturer.
- C. Apply dampproofing at a rate of 4 to 6 gallons per 100 square feet. If applying 2 coats, each coat shall be 2 to 3 gallons per 100 square feet. First coat must be allowed to dry prior to the application of the second coat. Coating must be continuous and free from breaks and pinholes. The coating shall provide a water tight sealing surface.

3.03 FIELD QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.

3.04 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Division 01 General Requirements.

END OF SECTION

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DIVISION 03 - CONCRETE

MassDOT STANDARDS (2023) IDENTIFIED ARE INCORPORATED BY REFERENCE AND THE FOLLOWING SUPPLEMENTS APPLY TO THIS PROJECT.

SUBSECTION 901: CEMENT CONCRETE

OVERALL

Comply with the requirements of Division 01 General Requirements Specifications for measurement and payment; coordination, sequencing, and scheduling; submittals; quality assurance; qualifications; delivery, storage and handling; existing conditions; source quality control; field quality control; startup and commissioning; and closeout activities.

References to “Department” shall mean Owner or Resident Project Representative for this Project. Inspections shall be the responsibility of the Owner and the Engineer instead of MassDOT.

DELETE “MassDOT Inspector” and REPLACE with “Owner or Engineer”.

Content of this Section may be supplemented by other Specifications as indicated.

END OF SUPPLEMENT

DIVISION 03 - CONCRETE

**MassDOT STANDARDS (2023) IDENTIFIED ARE INCORPORATED BY REFERENCE AND THE
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SECTION 900: STRUCTURES

SUBSECTION 901: CEMENT CONCRETE

DESCRIPTION

901.20: General

Cement Concrete with or without reinforcement as required for bridges, culverts, walls, steps, drop inlets and other work shall be constructed to the designs and dimensions indicated on the plans or as directed and to close conformity with the lines and grades established by the Engineer.

Where necessary, at the direction of the Engineer, the dimensions or design may be adjusted to fit foundation, slope or construction conditions as encountered.

MATERIALS

901.40 : Materials

Materials shall meet the requirements specified in the following Subsections of Division III, Materials:

Cement Concrete.....	M4.02.00
High Performance Cement Concrete	M4.06.1
Reinforcing Steel.....	M8.01.0
Epoxy Coated Reinforcing Bars	M8.01.7
Galvanized Reinforcing Bars.....	M8.01.8
Mechanical Reinforcing Bar Splicer.....	M8.01.9
Stay-in-Place Bridge Deck Form.....	M8.21.0
Prefomed Expansion Joint Filler.....	M9.14.0
Prefomed Bituminous Fiber Joint Filler.....	M3.05.3
Prefomed Compression Joint Seals (Bridges).....	M9.14.1
Polyurethane Joint Sealer (Flow Type)	M9.14.3
Polyurethane Joint Sealer (Non-Sag Type).....	M9.14.4
Bonded Closed Cell Joint System.....	M9.14.6
Plastic Water Stops.....	M9.07.0
Curing Materials	
Impervious Liquid Membrane.....	M9.06.5
Waterproof Paper.....	M9.06.0
Burlap.....	M9.06.3
White Polyethylene for Curing.....	M9.06.1, Part B
Polyethylene Coated Burlap.....	M9.06.4
Concrete Penetrant/Sealer.....	M9.15.0

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Metal Masonry Plate Bearing Pads

Rubber - Cotton Duck Bearing Pad.....M9.16.1
Molded Fabric Bearing Pad.....M9.16.2

For any project that requires the placement of cement concrete for structural purposes, the Contractor shall supply to the project for the use of the Engineer the following equipment as an incidental item, if not already provided for in a previous section.

1. Concrete cylinder molds with plastic covers shall conform to the requirements of AASHTO M 205M/M 205. The standard concrete cylinder shall be 6 in. in diameter by 12 in. high for regular Cement Concrete. When the nominal maximum size of the coarse aggregate does not exceed 1 in., 4 in. in diameter by 8 in. high cylinders may be used.
2. One complete set of tools for fabricating concrete cylinders that meet the requirements of AASHTO T 23.
 - a. Tamping rod shall be round, straight steel rod with at least the tamping end rounded to a hemispherical tip of the same diameter as the rod. Large rod, 5/8-in. diameter and approximately 2 ft long to prepare 6-in. diameter concrete cylinders; small rod, 3/8-in. diameter and approximately 12 in. long to prepare 4-in. diameter concrete cylinders.
 - b. Rubber mallet, shovel, trowel, wood float, metal float, scoop, and wheelbarrow.
3. One complete set of apparatus for measuring the slump of fresh concrete and shall conform to the requirements of AASHTO T 119M/T 119.
 - a. Slump cone.
 - b. Tamping rod. A round smooth 5/8-in. steel rod with the tamping end rounded to a hemispherical tip of 5/8-in. diameter. The minimum length shall be 2 ft.
 - c. Sheet metal pan 2 ft x 2 ft x 3 in.
 - d. Cement mold brush, rule, scoop and trowel.
4. One complete set of apparatus for measuring the air content of freshly mixed concrete and shall conform to the requirements of AASHTO T 152.
 - a. Air meter (AASHTO T 152, Type B).
 - b. Tamping rod. A round smooth 5/8-in. steel rod with the tamping end rounded to a hemispherical tip of 5/8-in. diameter. The minimum length shall be 18 in.
 - c. Rubber mallet, scoop, shovel, and a metal straightedge a minimum of 12 in. long.
5. One concrete curing box, equipped with thermostatically controlled cooling and heating device, meeting the moisture and temperature requirements of AASHTO T 23. The box shall be capable of holding a minimum of eighteen 6-in. x 12-in. cylinders.
6. Two 4-gal heavy duty buckets.
7. One complete device for measuring the temperature of freshly mixed concrete. The temperature measuring device shall conform to the requirements of AASHTO T 309.

CONSTRUCTION METHODS

901.60 : Footings

No concrete shall be placed until after the Engineer has approved the depth and dimensions of the excavation, the character of the material and the condition of the foundation. No footing shall be supported partially on rock and partially on soil. The rock shall be excavated as necessary to allow the placement of gravel borrow in accordance with Subsection 140: Excavation for Structures. The

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Engineer may direct, in writing, such changes in dimensions or elevations of footings as may be necessary to obtain satisfactory foundations. The Plans will be revised accordingly.

Shallow foundations (i.e., not supported by driven piles, drilled shafts, or other deep foundations) to be constructed under water shall be inspected prior to the placement of tremie concrete by a Diver hired by the Contractor independently and solely for the purpose of the inspection requirements of the Contract. The Diver shall be a Professional Engineer registered in the Commonwealth of Massachusetts.

In general, the Diver's tasks shall include inspection of the excavations for foundations to determine their completeness and suitability for the placement of concrete, inspection of the drilling and grouting operations for any dowels that may be specified, and inspection of the tremie placement operations to ensure that the concrete placement is proceeding properly and is completed in accordance with applicable contract documents.

The Diver shall be responsible to report any discrepancies in materials or workmanship to the Engineer. The Diver shall record their findings by written and photographic methods and a final report of findings, recommendations and actions taken shall be prepared for the Engineer.

901.61 : Forms, Falsework, and Centering

Approved centers and forms shall be provided by the Contractor. Piles shall be used for falsework if required by the Engineer. No extra compensation for falsework or falsework piling shall be allowed, such work shall be considered part of the form work. Falsework shall be set to give the structural camber indicated on the plans or as specified, plus allowance for shrinkage, shortening under load or settlement. Forms, falsework, and centering shall be designed for a liquid head, equal to the maximum height of the liquid concrete in the forms for various placing conditions assuming the load of the liquid concrete to be 150 pcf, and in addition thereto a live load allowance of 50 psf on horizontal surfaces.

All falsework or centering shall be adequate for the type of construction involved. The Contractor shall submit all shop drawings for falsework and centering, including design computations, formally signed and sealed by the Contractor's Massachusetts registered Professional Engineer. The Contractor's Professional Engineer shall certify that the falsework system has been assembled and constructed according to the approved falsework drawings, prior to placing loads on such falsework.

When structures are to be constructed over railroad tracks, the centering shall also conform to the requirements of the Railroad Company as to temporary operating clearances, safety and design.

Forms for all exposed portions of bridges and structures shall be lined with approved material, or form sheathing which shall consist of five-ply water-proof plywood, approved metal sheathing or other approved material in order to give the concrete a smooth even finish and uniform appearance. This requirement shall not apply to any part of a structure that will be at least 2 ft below the surface of adjacent ground in the completed project that will not be coated with bituminous damp-proofing. Any material that will provide tight forms will be acceptable for such locations.

Full sheets of plywood or other approved material shall be used wherever possible and shall be placed in a regular pattern. The use of small pieces and leftovers will not be permitted except as

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they may be needed to complete the design. Forms in good condition may be reused, but forms for any one exposed face shall be all new or all used material and a mixture of old and new forms will not be permitted. Forms for cylindrical pier columns shall be smooth and reasonably free of joints.

The sheathing shall be jointed tightly to prevent leakage from the mix and it shall be of sufficient strength to hold the concrete without bulging between supports. Forms shall be properly braced and tied so as to maintain proper dimensions. Bolts, rods, or other approved form ties shall be used for internal ties. Wire ties will not be permitted except when directed or where concrete is not exposed to view. The Engineer may require the Contractor to employ screw jacks or hard wood wedges in connection with the centering of falsework in order to take up any distortion or settlement in the form work either before or during the placing of the concrete.

Approved inserts required for form and/or falsework support shall be used in connection with all ties in the region of exposed surfaces on the concrete. They shall be so designed as to permit their removal from the concrete without injury to the concrete, and the metal remaining in the concrete shall be no closer than 1.5 in. to the surface. The inserts shall be truly round, not more than 1.5 in. in outside diameter and shall be treated with non-staining mineral oil or other satisfactory material adequate for preventing any adherence to surrounding concrete. Special tools and methods shall be used to remove the inserts from the concrete in a manner to prevent damage to the concrete. All ties and embedded devices required for form and/or falsework support that are to be left in place shall be either epoxy coated or galvanized to match the reinforcement within the concrete placement. Galvanizing of such ties and embedded hardware shall be in accordance with 960.64: Galvanizing.

Form ties of a design with a weakened section 1.5 in. back from the concrete face may be used at places of minor pressure when permitted by the Engineer, but such ties shall be provided with special inserts so as to assure the breaking off of the ties at the proper depth inside the face of the concrete. When such ties fail to break off at the designed depth, the tie metal shall be drilled out before the tie hole is patched. Voids and forming accessory holes shall be patched as necessary to match the surrounding texture and color to produce a uniform appearance.

The use of wooden struts within forms, or of metal ties without approved inserts, as required, will not be permitted.

The centers shall be true to the lines, satisfactorily supported and firmly secured. They shall remain in place as long as directed and shall be replaced with new ones if they lose their proper dimensions and shape.

Forms for the roadway deck slabs shall be so construed that under full dead load, the thickness of the slabs shall be the required thickness shown on the plans and the surface of the pavement will accurately conform to the profile grades, cross sections and alignment shown on the plans. Allowance shall be made for the camber of the floor members as erected and for the additional dead load deflections of the floor members.

Slab haunches shall be provided over steel girders, floor beams or stringers. The depth of haunches shall be variable as required to maintain the uniform thickness of slab between the steel supports.

All exposed edges and corners of concrete not otherwise specified on the plans shall be formed with a wooden triangular 45° chamfer strip, ¾ in. on the square sides. These triangular chamfer strips shall be machine surfaced on all sides and shall be of uniform dimensions throughout the project.

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Any chamfered or beveled corners of concrete specified on the plans of larger size shall be formed and finished as required for other parts of the adjacent forms.

Surfaces of the abutments and wingwalls that are designated to receive striation texturing shall be cast using one of the following fractured fin form liner patterns:

1. GREENSTREAK Architectural Form Liners, pattern number 367, as manufactured by GREENSTREAK, 3400 Tree Court Industrial Blvd., St. Louis, MO 63122
2. SYMONS Form Liner, P/C 30492 pattern, as manufactured by SYMONS Corporation, Des Plaines, IL 60018
3. LITHOTEX Form Liner, T33050 texture, as manufacture by L.M. SCOFIELD Co., Los Angeles, CA 90040
4. An equal fractured fin form liner approved by the Engineer that meets the dimensions as shown on the Plans.

The same form liner pattern must be used exclusively for all textured surfaces on the job. Using form liners of different manufacturers together on the same job will not be permitted. Form liners shall be installed to the limits as shown on the Plans. The Contractor shall ensure that the striation fins are plumb. Horizontal joints are not allowed in the form liner.

Form liners shall be used and installed in accordance with the manufacturer's written instructions and recommendations. Additional job site training in the proper use of the form liner shall be provided by an authorized manufacturer's representative at no additional cost to the project. A test panel with a minimum size of 4 ft x 4 ft shall be erected at the job site for establishing acceptance criteria for the finished surface.

Bridge bearing anchor bolts in piers shall be set accurately by a template prior to placing concrete. Anchor bolts in abutments may be set by a template or by drilling and grouting. Grout shall be a non-shrinking type approved by the Engineer.

The shape, strength, rigidity, water-tightness and surface smoothness of re-used forms shall be maintained at all times. Any warped or bulged lumber must be resized before being used. Forms that are unsatisfactory in any respect shall not be used and shall be removed immediately from the work.

The inside of forms shall be coated with non-staining mineral oil or other approved material to prevent adherence of the concrete to the forms, immediately before placing the concrete. When oil is used, it shall be applied before the reinforcing steel is placed. Any material that will adhere to, discolor or affect the concrete in any manner shall not be used. Forms for bridge decks shall not be oiled but shall be dampened with water ahead of concrete placement.

In the construction of copings, railings and other intricate sections, extreme care shall be taken in the construction to insure true lines.

Prior to placing concrete in the forms all foreign matter and any extraneous materials shall be removed.

Forms shall be inspected immediately preceding and during the placing of the concrete. All dimensions shall be checked carefully and any errors, bulges, warping or other defects shall be remedied before any concrete is placed.

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Temporary openings shall be provided for inspection at the base of the column and wall forms and near the bottom of all deep members.

The foregoing specifications for forms as regards to design, mortar-tightness, chamfers or moldings, bracing, alignment, treatment by coating with oil or other approved material, removing and reuse, shall apply to metal forms when such forms are approved for use. The metal forms used shall be of such strength that the forms will remain true to shape. All bolt and rivet heads shall be countersunk. Clamps, pins or other connecting devices shall be designed to hold the forms rigidly together and to allow removal without injury to the concrete. Metal forms which do not present a smooth surface or which do not line up properly shall not be used. Special care shall be exercised to keep metal forms free from rust, grease or other foreign matter that will tend to discolor the concrete. Metal forms shall be provided with an adjustable metal section or occasional sections where wooden forms may be inserted to compensate for slight inaccuracies in measurement.

Removable or stay-in-place forms for bridge decks may be used as alternates except in hazardous locations where stay-in-place forms shall be used. Hazardous locations are defined as high volume roadways and all railroads under the bridge.

Removable forms shall be used for forming end diaphragms, bays with longitudinal construction joints, and overhanging portions of decks.

Material to prevent concrete from adhering to the forms shall not be used when stay-in-place forms are used.

Design of Permanent Steel Bridge Deck Forms.

The following criteria shall govern the design of permanent steel bridge deck forms:

1. The steel forms shall be designed on the basis of dead load of form, reinforcement and plastic concrete plus 50 psf for construction loads. The unit working stress in the steel sheets shall not be more than 0.725 of the specified minimum yield strength of the material furnished, but not to exceed 36,000 psi.
2. Deflection under the load of the forms, the plastic concrete and reinforcement shall not exceed 1/180 of the form span or ½ in., whichever is less. In no case shall this design loading be less than 120 psf total.

The permissible form camber shall be based on the actual dead load condition. Camber shall not be used to compensate for deflection in excess of the foregoing limits.

3. The design span of the form sheets shall be the clear span of the form plus 2 in. (50 mm) measured parallel to the form flutes.
4. Physical design properties shall be computed in accordance with requirements of the American Iron and Steel Institute Specification for the Design of Cold Formed Steel Structural Members, latest published edition.
5. Longitudinal reinforcement shall have minimum concrete cover, as measured from the permanent steel deck form, of 1 in. Main reinforcement shall have minimum concrete cover, as measured from the permanent steel deck form, of 1.5 in.
6. The plan dimensions of both layers of primary deck reinforcement from the top surface of the concrete deck shall be maintained.

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7. Permanent steel bridge deck form shall not be considered as lateral bracing for compression flanges of supporting structural members.
8. Permanent steel bridge deck form shall not be used in panels where longitudinal deck construction joints are located between stringers.
9. Welding shall not be permitted to flanges in tension or to structural steel bridge elements fabricated from nonweldable grades of steel.
10. Fabricator's shop and erection drawings shall be submitted to the Engineer for approval. These plans shall indicate the grade of steel deck form sheets and a clear indication of locations where the forms are supported by steel beam flanges subject to tensile stresses.

All forms shall be installed in accordance with approved fabrication and erection plans. Form sheets shall not be permitted to rest directly on the top of the stringer or floor beam flanges. Sheets shall be securely fastened to form supports and shall have a minimum bearing length of 1 in. at each end. Form supports shall be placed in direct contact with the flange of stringer or floor beam. All attachments shall be made by permissible welds, bolts, or clips of other approved means. However, welding of form supports to flanges of steels not considered weldable and to portions of flange subject to tensile stresses shall not be permitted. Welding and welds shall be in accordance with the provisions of AWS D1.3 pertaining to fillet welds except that 1/8-in. fillet welds will be permitted.

Any permanently exposed form metal where the galvanized coating has been damaged shall be thoroughly cleaned and painted with galvanizing repair paint in accordance with 960.64: Galvanizing. Minor heat discoloration in areas of welds need not be touched up.

The Contractor's method of construction should be carefully observed during all phases of the construction of the bridge deck slab. These phases include installation of the metal forms; location and fastening of the reinforcement; composition of concrete items; mixing procedures, concrete placement and vibration; and finishing of the bridge deck. Should the Engineer determine that the procedures used during the placement of the concrete warrant inspection of the underside of the deck, the Contractor shall remove at least one section of the forms at a location and time selected by the Engineer for each span in the contract at no additional cost to the project. This should be done as soon after placing the concrete as practicable in order to provide visual evidence that the concrete mix and the Contractor's procedures are obtaining the desired results. An additional section shall be removed at no additional cost to the project if the Engineer determines that there has been any change in the concrete mix or in the Contractor's procedures warranting additional inspection.

After the deck concrete has been in place for a minimum period of 2 days, the concrete shall be tested for soundness and bonding of the forms by sounding with a hammer as directed by the Engineer. If areas of doubtful soundness are disclosed by this procedure, the Contractor will be required to remove the forms from such areas for visual inspection after the pour has attained adequate strength. This removal of the permanent steel bridge deck forms shall be at no cost to the project. At locations where sections of the forms are removed, the Contractor will not be required to replace the forms, but the adjacent metal forms and supports shall be repaired to present a neat appearance and assure their satisfactory retention. As soon as the form is removed, the concrete surfaces will be examined for cavities, honeycombing and other defects. If irregularities do not justify rejection of the work, the concrete shall be repaired as the Engineer may direct and shall be given an Ordinary Surface Finish, in accordance with the contract specifications. If the concrete where the form is removed is unsatisfactory, additional forms, as necessary, shall be removed at no

additional cost to the project to inspect and repair the slab, and the Contractor's methods of construction shall be modified as required to obtain satisfactory concrete in the slab. All unsatisfactory concrete shall be removed or repaired as directed by the Engineer.

The amount of sounding and form removal may be moderated, at the Engineer's discretion, after a substantial amount of slab has been constructed and inspected, if the Contractor's methods of construction and the results of the inspections as outlined above indicate that sound concrete is being obtained through the slabs.

The Contractor shall provide all facilities as are reasonably required for the safe and convenient conduct of the Engineer's inspection procedure.

901.62 : Reinforcement

The Contractor shall submit for approval detailed shop drawings and schedules of the reinforcing bars so that the reinforcement may be properly placed, and its mass readily computed.

Coated bars shall be either epoxy coated or galvanized, as specified on the plans. Where coated bars are called for without distinction, they may be either epoxy coated bars or galvanized bars, however mixing epoxy coated and galvanized bars will not be permitted. Where coated bars are used in combination with uncoated bars in a reinforcing mat or cage and the coated bars will touch or be tied to uncoated bars with wire ties, only epoxy coated bars shall be used.

All support devices and ties for galvanized bars used in deck reinforcing shall be coated so that there is no electrical continuity either between reinforcing mats or between the reinforcing and the stay-in-place forms or steel beams.

All support devices and ties for epoxy coated bars used in deck reinforcing shall be either epoxy coated or coated with a plastic material compatible with the coating of the reinforcement.

All coated and un-coated reinforcing bars shall be stored above the surface of the ground on platforms, skids, or other supports and shall be protected from mechanical injury and surface deterioration caused by exposure to conditions producing rust. When placed in the work, reinforcing bars shall be free from dirt, loose rust or scale, mortar, paint, grease, oil, or other non-metallic coatings that reduce bond. Reinforcing bars shall be free from injurious defects such as cracks and laminations. Any injurious defects of the epoxy coating shall be repaired and allowed to cure completely prior to concrete placement.

Epoxy coated reinforcing bars shall be coated in a certified epoxy coating applicator plant in accordance with the Concrete Reinforcing Steel Institute's Voluntary Certification Program for Fusion-Bonded Epoxy Coated Applicator Plants. Epoxy coated reinforcing steel shall be handled and stored by methods that will not damage the epoxy coating. All systems for handling epoxy coated reinforcing bars shall have adequately padded contact areas. All bundling bands shall be padded and all bundles shall be lifted with a strong back, multiple supports, or platform bridge so as to prevent bar to bar abrasion from sags in the bundle. Bars or bundles shall not be dropped or dragged. Epoxy coated reinforcing bars shall be stored on wooden or padded supports.

Epoxy coated reinforcing steel shall be protected from sunlight, salt spray, and exposure to the weather. Provisions shall be made for continuous air circulation around the coated reinforcing to minimize condensation under the protective covering.

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If it is impractical to obtain or use bars of the full length required, the bars shall be lapped for the length shown on the plans or joined with mechanical splicers. If no lap length is provided, the lap length shall be calculated for the type of bar used according to the latest AASHTO Standard Specifications for Highway Bridges for a Class C tension lap splice.

If mechanical splicers are used proper consideration shall be given to the installation sequence and shall be so noted on the reinforcing steel shop drawings. The mechanical splicing system shall be assembled in accordance with the manufacturer's recommendations.

Reinforcement bars to be spliced mechanically shall be marked using indelible ink prior to splice attachment to ensure sufficient embedment in the splicing device. Assembly features shall provide for reasonably error free work under construction conditions. Mechanical reinforcing bar splicers shall be staggered in accordance with the Plans.

The entire splice area of epoxy coated mechanical splicing systems shall be painted with a compatible approved epoxy repair coating after the system is assembled. The entire splice area of galvanized splicing systems shall be painted with a compatible approved galvanizing repair coating after the system is assembled. For mechanical splicer systems that cannot be effectively sealed with an epoxy or galvanizing repair coating, an approved heat shrink tube/sleeving shall be required after installation to seal the system. The mechanical splicer shall not be encased in concrete until the visual inspection and the required testing have been completed and approved by the Engineer.

The steel shall be bent in the shop true to templates and shall be placed accurately as shown on the plans with the following tolerance:

1. Cover (clearance from face of concrete to face of bar) $\pm\frac{1}{4}$ in.
2. Horizontal spacing of bars ± 2 in. (however the required number of bars must be placed).
The minimum spacing cannot be decreased. The reinforcement shall be placed so as to ensure it remains in the correct position during the placing and hardening of the concrete. The clear distance between spliced bars and/or splicing devices shall not be less than 1.5 times the nominal diameter of the bars, 1.5 times the maximum size of the coarse aggregate, nor less than 1.5 in.

The required distance between reinforcing steel and the forms shall be maintained by means of stays, blocks, ties, hangers or other approved supports. The spacing of reinforcing supports shall not exceed 4 ft.

Steel reinforcing mats shall be firmly secured against displacement by tying every other intersection point with a maximum of 12 in. between tied joints. In addition, steel reinforcing mats (top and bottom) shall be securely connected together so that uniform vertical spacing can be maintained throughout. This connection may be accomplished by tying with coated tie wires or other means as approved by the Engineer. Connections between the top and bottom mats of reinforcement shall be placed no farther apart than 4 ft on center. Support devices may be utilized for this purpose. Connection devices shall neither deflect the steel reinforcing nor interfere with the smooth flow of concrete.

Blocks for holding reinforcement from contact with the forms shall be precast mortar blocks of approved shape and dimensions. Blocks for spacing reinforcing bars shall also be precast mortar blocks of approved designs and short enough to permit their ends to be adequately covered with concrete. The precast mortar blocks shall be made from the same materials and of the same

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proportions of sand and cement as that of the concrete in which they are to be used. They shall be cast and properly cured before use and shall have a wire of copper or other non-rusting metal or other approved device cast into each block suitably placed so that the block can be securely fastened to the reinforcement. Layers of bars, except for those placed in bridge decks, shall be separated by such blocks, which may be reinforced, and which shall have slots to receive the bars and hold them in place, or by other approved means. Any parts of metal supports that are left in place within 3 in. of an exposed surface of the concrete shall be made of either non-rusting metal, or shall be epoxy coated or galvanized to match the reinforcement. Galvanizing of such parts shall be in accordance with 960.64: Galvanizing. The use of pebbles, pieces of broken stone, metal pipe or wooden blocks will not be permitted.

Reinforcement in any member or section shall be in place and approved by the Engineer before the placing of concrete begins. In no case shall reinforcing steel be driven or forced into the concrete and any reinforced concrete placed in violation of this provision will be rejected by the Engineer, and then shall be removed and replaced by the Contractor entirely at their own expense.

When wire mesh is used as reinforcement, it shall be furnished and placed in accordance with the plans. If the wire mesh is shipped in rolls, it shall be straightened into flat sheets before being used.

Dowels, where required, shall be furnished and placed as indicated on the plans and as directed.

Reinforcement that extends continuously within the concrete of the substructure and the concrete of the superstructure, or any other reinforcement that might stain the exposed surface of the bridge shall be given a light coat of neat cement grout on the surfaces of the reinforcement that will be exposed for more than three weeks before being encased in concrete. Subsequent coats of grout may be required.

901.63 : Handling and Placing Concrete

The Contractor shall notify the Engineer at least 24 hours in advance of their intention to place concrete in order to provide ample time for inspection of forms, reinforcement, materials, and equipment.

All concrete shall be placed during daylight, and the placing of concrete shall not be started unless it can be completed and finished during daylight hours, except that when an adequate and approved lighting system is provided beforehand, the Engineer may waive this requirement.

No concrete shall be placed in a bridge or other structure where piles are required until all piles in the structure have been driven. However, the placing of concrete in the steel shells for cast-in-place concrete piles and steel pipe piles shall be done as specified in 940.69: Placing and Protecting Concrete Filled Piles.

No concrete shall be placed until the depth, character and water conditions of the foundations, the adequacy of falsework and forms, the absence of debris in the forms, the condition of the construction joints, and the condition and spacing of the reinforcing steel have been inspected and approved by the Engineer.

The placing of concrete shall be so regulated that the pressures caused by the wet concrete shall not cause distortion or movement of the forms.

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The placement and consolidation of the concrete shall be conducted so as to not cause segregation of materials nor displacement of reinforcement and shall result in a dense homogeneous concrete that is free of voids.

Concrete shall be deposited in such manner that the total deflection or settlement of supporting members and the final finishing of the surface shall have occurred before initial set of the concrete takes place. An approved admixture shall be used as necessary to retard setting.

A. Transportation.

The concrete shall be transported from the mixer and placed in the forms by a method that will permit handling concrete of the slump required without segregation. Buggies and wheelbarrows used for this purpose shall be equipped with pneumatic tires. Chutes may be used but the use of long chutes will be permitted only on authority from the Engineer. If such conveyors are allowed and the quality of the concrete as it reaches the forms or the methods of placing or working it therein are not satisfactory, the Engineer may order their use discontinued and the substitution of a satisfactory method of placing. Chutes shall be constructed of aluminum free metal or metal lined and shall extend as nearly as possible to the point of concrete placement. Long chutes shall be provided with reverse flow or remixing hoppers in order to correct for segregation. All chutes shall be kept clean and free from coatings of hardened concrete. Concrete shall not be permitted to be transported through chutes or pipes composed of aluminum.

Transportation of concrete by pumping will be permitted provided that the required slump or air content can be maintained at the discharge end of the hose and there is no adverse effect to the mix design. Concrete shall be sampled and tested at the end of the chute or if pumping is allowed, from the discharge end of the hose. The equipment shall be suitable in kind and adequate in capability for the work. The operation shall be such that a continuous stream of concrete without air pockets is produced. When pumping is completed, the concrete remaining in the pipeline shall be ejected in such a manner that there will be no separation of the ingredients.

Pumping through aluminum pipes will not be permitted.

All pipes and chutes shall be kept clean and free from coatings of hardened concrete.

B. Depositing.

The concrete shall be placed in the form in the approved manner to prevent stone pockets, voids or segregation and to reduce handling and flowing in the forms to a minimum. The concrete shall not be dropped more than 3 ft or dragged more than 10 ft in the forms. Vibrators shall not be used to transport concrete. Epoxy coated steel reinforcement shall be protected from damage from dropping concrete by limiting the maximum height of concrete drop to 2 ft. Points of deposit shall be spaced not more than 20 ft apart nor more than 10 ft from the ends of the forms. Concrete shall be properly distributed in the forms by hand shoveling. The forms shall be filled at a rate of 1 to 3 ft in depth per hour. Care shall be taken to avoid splashing the forms and reinforcing above the level of the concrete as placed. Beams and slabs shall be placed in one continuous operation.

C. Consolidation.

Each layer shall be thoroughly consolidated by rodding and vibration. The face of the forms shall be carefully spaded, if possible, to bring a dense mortar to the face, and produce a good finish.

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All concrete for structures shall be compacted by means of approved mechanical vibrators operated within the mass of the concrete. The Contractor shall provide approved methods of vibration to fully consolidate the mix. Vibrators shall be of internal type of standard make and approved capacity, and shall be capable of transmitting vibrations within the concrete at frequencies of not less than 5,500 vibrations per minute nor more than 13,500 vibrations per minute. Epoxy coated steel reinforcement shall be protected from damage from exposed steel headed immersion-type vibrators. Immersion-type vibrators used to consolidate concrete that is reinforced with epoxy coated reinforcement shall feature heads covered with rubber or other resilient non-metallic material approved for concrete consolidation.

Vibration of forms or reinforcing shall not be permitted except where internal vibration is not practicable and then only with the approval of the Engineer.

The vibrator shall be applied directly to the concrete mass at the point and time of deposit and shall be moved throughout the mass continuously from point to point for a sufficient duration to accomplish thorough consolidation. The duration of vibration shall not be prolonged to the point where segregation, serious loss of entrained air, or excessive water bleeding occurs. Vibrators shall not be used close to the forms.

When concrete is placed in lifts, vibrators shall be inserted into at least half the depth of the underlying lift so as to thoroughly consolidate the two lifts into an integral mass without streaks or hardened lift lines. Vibrators shall not be used to move concrete in the forms.

A sufficient number of vibrators shall be provided to obtain proper compaction in accordance with the rate of deposit.

Extreme care shall be taken to prevent penetrating or disturbing previously placed concrete that has become partially set.

D. Placing Concrete Under Water.

Concrete may be deposited in water only when provided by the plans or in the Special Provisions or by approval in writing by the Engineer; and only under the direct supervision of the Engineer.

The concrete shall be of the designation required except that an additional 10 percent of cement shall be added to all concrete deposited under water except that mass concrete shall be placed with the cement content required by Special Provisions.

The method and equipment to be used shall be approved by the Engineer before work has begun.

Concrete deposited under water shall be carefully placed by the tremie method in a compound mass in its final position and shall not be disturbed after being deposited. Special care must be taken to maintain still water at the point of deposit. No concrete shall be placed in running water and all form work designed to retain concrete under water shall be watertight. The consistency of the concrete shall be carefully regulated, and special care shall be taken to prevent segregation of the materials. The concrete shall be distributed uniformly over the entire area between forms in order to maintain a level surface.

The work shall be carried out in a continuous operation with sufficient rapidity to prevent the formation of layers or inclined seams. Concrete shall not be placed in water having a temperature

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below 35°F. Pumping of water will not be permitted while the concrete is being deposited nor before it is sufficiently hardened.

The tremie shall be watertight, consisting of a tube constructed in sections with flange couplings fitted with gaskets, and the inside diameter shall be sufficiently large to permit a free flow of concrete. The spacing of tremie tubes shall not exceed 20 ft on centers or 10 ft from the forms. Tremie tubes shall not be moved horizontally or the seal purposely broken once placing of concrete has started.

The radius of influence of a tremie shall not be assumed to exceed 10 ft. The means of supporting the tremie shall be as such as to permit it to be rapidly lowered when necessary to retard or stop the flow of concrete. The discharge end shall be closed at the start of the work so as to prevent water from entering the tube and shall be kept entirely sealed at all times and the tremie tube kept full to the bottom of the hopper during the depositing of the concrete. When a batch is dumped into the hopper the tremie shall be slightly raised, but not out of the concrete at the bottom, until the batch discharges to the bottom of the hopper. The flow shall then be stopped by lowering the tremie. Special care shall be taken to maintain as nearly as practicable a uniform flow and to avoid dropping the concrete through the water. The flow shall be continuous until the work is completed. If the charge is lost during depositing, the tremie shall be withdrawn and refilled.

Dewatering may start when the concrete seal has reached a compressive strength of 1,200 psi.

All laitance and scale shall be removed so that sound, durable concrete is exposed to the area on which the construction is to be based and shall be leveled off with epoxy bonded concrete or mortar.

E. Concrete Exposed to Sea Water.

Concrete structures so located as to be subjected to the action of sea water shall be constructed in a manner to provide a maximum resistance to its disintegrating action.

The concrete shall conform to M4.06.1: High Performance Cement Concrete. The water content shall be carefully controlled and so regulated as to produce concrete of maximum impermeability. In placing concrete, care shall be taken to avoid the formation of pockets and the concrete shall be thoroughly compacted to the satisfaction of the Engineer. The original surface of the concrete shall be left undisturbed. In order to secure a thick and dense surface film, the surfaces of the forms shall be heavily coated with shellac or an approved form oil. The range of possible disintegration of the concrete from an elevation below that of low tide to an elevation above that of extreme high tide shall be determined by the Engineer, and, except with their special permission, no construction joints shall be located within this range. In the determination of this range, due consideration shall be given to wave action, ice formation and other conditions affecting the extreme limits of possible deterioration and disintegration.

Concrete in sea water within the range as above determined shall, except when especially provided for by the plans or in the Special Provisions, be deposited in the dry and no sea water shall be allowed to come in direct contact with the concrete for at least 30 days after placement.

901.64 : Protection from Adverse Weather

Suitable precautions shall be taken to thoroughly protect the concrete from any damage by adverse weather conditions during and after placement.

A. Hot and Dry Weather Requirements.

During hot dry weather, and as directed, all new concrete shall be kept shaded from the sun, shielded from the wind and kept wet with water, or protected by other approved methods to retain the moisture in the concrete throughout the curing period. During concrete placement operations in hot weather, appropriate measures shall be taken to reduce the hazards of increased rate of cement hydration, flash set, loss of water due to evaporation, high concrete ingredient temperatures, and the increased difficulty of concrete placing and finishing. The following requirements shall be met during concrete placement operations in hot weather:

1. Concrete Temperature. The temperature of the concrete at the point of discharge shall not exceed 90°F.
2. Cooling Materials. The Contractor may reduce the temperature of the concrete by cooling one or more of several ingredients. The aggregates may be cooled by fogging, or other suitable means that will not result in a high variation of moisture content within the stockpile. Chipped or crushed ice may be used in the mix as a portion of the mixing water on a pound for pound basis, provided such measure is determined at the time it is placed in the mix. If used, all ice shall be melted before the batch is discharged from the mixing unit. Water may also be cooled by refrigeration or other means that provide a uniform mixing water temperature.
3. Concrete Placing. Immediately before the concrete is placed, the forms and reinforcement steel shall be cooled by spraying with water. In no case shall there be any standing water in the concrete forms as a result of the spraying procedures. The Contractor shall have sufficient skilled men and adequate equipment to place the concrete without delays which may cause excessive slump loss and evaporation due to over-mixing or exposure before it is placed.
4. Finishing. To prevent shrinkage cracking resulting from moisture loss, the Contractor may be required to furnish windscreens, to use water fogging, or other approved means of supplying moisture. If the use of windscreens is required, the windscreens shall consist of canvas barriers of suitable height erected on the windward side of the concrete placement. Finishing operations shall follow as closely as practicable behind the placing operation so that curing may begin as soon as possible.

B. Rainy Weather Requirements.

During rainy weather all new concrete shall be properly covered, as may be necessary to prevent damage. Sufficient approved material for covering shall be available at the site of the work for immediate use as may be needed.

C. Cold Weather Requirements.

Cold weather is defined as any time during the concrete placement or curing period the ambient temperature at the work site drops below 40°F or the ambient temperature at the site drops below 50°F for a period of 12 hours or more. Any concrete placed during cold weather shall be placed at the Contractor's risk and any damage or unsatisfactory concrete shall be removed and replaced at

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the Contractor’s expense. When cold weather is reasonably expected or has occurred within 7 days of anticipated concrete placement, the Contractor shall include as part of their Placement and Curing Plan detailed procedures for the production, transporting, placing, protecting, curing, and temperature monitoring of concrete during cold weather. The Contractor shall include verifiable evidence of satisfactory results obtained by use of their proposed methods. Procedures for accommodating abrupt changes in weather conditions shall be included. Placement of concrete shall not commence until the plan is accepted by the Engineer. Acceptance of the plan will take at least one day. All material and equipment required for cold weather placement and curing protection shall be available at the project site before commencing concrete placement. All snow, ice, and frost shall be removed from the surfaces, including reinforcement and subgrade, against which the concrete is to be placed. The temperature of any surface that will come into contact with fresh concrete shall be at least 35°F and shall be maintained at a temperature of 35°F or above during the placement of concrete.

During the curing period, the Contractor shall provide suitable measures to maintain the concrete surface temperature which shall be monitored by continuously recording surface temperature measuring devices that are accurate within 1.8°F. One temperature measuring device shall be required to be randomly placed in an accessible location for every 1,500 ft² of concrete surface area being cured.

The minimum concrete surface temperature requirements indicated in the Table 901.1 shall be continuously maintained for a curing period of at least 7 days. The 7-day minimum curing period of time will be extended when necessary to develop satisfactory strength in the concrete.

Any day during which the minimum concrete surface temperature requirement is not continuously maintained shall not count as a day contributing to the curing period.

Table 901.64-1: Cold Weather Concrete Surface Temperature Requirements

	Minimum Section Size Dimension (ft)			
	<1	>1, but ≤3	>3, but ≤6	>6
Minimum temperature of concrete during curing period	57°F	54°F	50°F	50°F
Maximum allowable temperature drop in any 24-hour period after end of curing	50°F	40°F	30°F	20°F

The mixing water and/or aggregates may be heated (prior to cement being added) by approved methods so that the temperature of the aggregates and water mixture is not less than 70°F nor more than 140°F. The temperature of the concrete shall not be less than 60°F nor more than 90°F at the time of placing it in the forms. The heating shall be done in a manner to preclude the occurrence of overheated areas that might result in damage to the materials. Any material containing frost or lumps of hardened material shall not be used.

Insulation shall be approved blanket, batt or board insulation with a thermal conductivity of less than 0.25 BTU per hour per square foot for a thermal gradient of 1°F/in. Insulation shall be applied

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to the forms in an approved manner. Insulation with breaks or tears shall be rejected unless satisfactorily repaired. Openings for thermometers shall be provided where ordered.

Where it may be expected that considerable heat will be generated by the hydration of the concrete, and in some cases where heat is not rapidly dissipated, suitable coverings shall be used to protect concrete. Heavy footings in which the concrete is placed at a concrete temperature of 70°F where protection is provided by the surrounding earth, except on top, shall be protected by a tarpaulin placed over the top with an air space between the concrete and the tarpaulin and sufficient added artificial heat shall be provided to maintain the minimum required concrete surface temperature. Mass concrete, when concrete as such is so specified on the plans or so defined by the Engineer, placed at a concrete temperature of 70°F, shall be protected by enclosure with tight wooden forms at least $\frac{5}{8}$ in. in thickness except at corners and edges and sufficient added artificial heat shall be provided to maintain the minimum required concrete surface temperature. Double sheathing, insulation board or tarpaulins with a dead air space between the covering and the forms shall be placed to equally protect such corners and edges. Supplemental enclosures and added artificial heat will be utilized when required to maintain the minimum concrete surface temperature.

As much as possible, any enclosure for protection shall be in place before depositing of any concrete and the remainder shall be installed as rapidly as possible in order to reduce heat losses to a minimum. Heating within the enclosure shall be attained by such means of artificial heat as will maintain the temperatures specified continuously and with a reasonable degree of uniformity in all parts of the enclosures. All exposed surfaces of concrete within the enclosure shall be kept sufficiently moist to prevent any drying of the surface concrete with possible resulting damage to the concrete in place. Heating appliances shall not be placed in such a manner as to endanger the enclosure, forms or supports, or expose any area of concrete to drying out or other injury due to excessive temperatures.

901.65 : Finishing and Curing

The requirements of this subsection shall be considered applicable to all concrete placements with the exception of bridge deck, bridge sidewalk, bridge safety curb, and bridge median concrete placements. Refer to the requirements specified under 901.66: Placement, Finishing and Curing of Concrete Bridge Decks for bridge deck, bridge sidewalk, bridge safety curb, and bridge median concrete placements.

A. Finishing.

The external surface of all concrete shall be thoroughly vibrated and spaded during the operation of depositing the concrete by means of tools of an approved type. The vibrating and spading shall be such as to force all coarse aggregate away from the surface and slowly work the mortar against the forms to produce a smooth finish free from water, air pockets, and honeycombing. The use of mortar, cement water mixture, or neat cement for plastering over any concrete surface will not be permitted.

The final finish required on particular concrete shall be as follows:

1. Formed Surfaces not Exposed to View.

Immediately after forms have been removed and form ties cut back from the face of the concrete, all voids and cavities shall be filled with a stiff mortar of the same composition and air-entrainment as

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the mortar in the original concrete mix. The mortar for filling shall have been mixed and let set for 30 minutes and then remixed before placing in the work. In case the operation of filling is delayed, the surface of the concrete shall be thoroughly cleaned and washed with water, if necessary, before the mortar is applied.

2. Formed Surfaces Exposed to View.

Within 48 hours after the forms have been removed and form ties cut back from the face of the concrete, all fins, projections and irregularities shall be carefully removed and all voids and cavities shall be carefully and completely filled with a stiff mortar of the same composition and air-entrainment as the mortar in the original concrete mix. The same brand and color of cement, and the same kind and color of aggregate as was used in the original concrete mix shall be used in this mortar. The mortar for filling shall have been mixed and let set for 30 minutes and then remixed before placing in the work. The surface film of all such pointed surfaces shall be carefully removed before setting of the mortar occurs.

If the Engineer determines these surfaces as prepared do not present a uniformly smooth, clean surface of even texture and appearance, the surface shall be treated and rubbed to obtain a satisfactory finish. The Engineer shall be the sole judge of the amount of rubbing which will be required.

If rubbing is required, the rubbing will start with 48 hours of notification that rubbing is required, the surface should be wetted with clean water and rubbed with a No. 16 carborundum brick or other abrasive of equal quality until even and smooth and of uniform appearance, without applying any cement or other coating. If additional finishing is necessary, it shall be obtained by a thorough rubbing with a No. 10 carborundum brick or other abrasive of equal quality. Subject to approval by the Engineer, rubbing may be performed by use of satisfactory power equipment and tools, providing that the operational procedures shall be the same as those outlined above for hand rubbing.

Rubbing will be kept to a minimum found necessary to produce smooth, even surfaces of uniform appearance. Rubbing will not be required to fill very small surface air bubble holes, to remove a uniform wood grain pattern left by forms, nor to remove inconspicuous lines or marking between form panels.

Patches required for form ties, if carefully and properly done, may not necessitate rubbing. If however, this work is done in such a manner that these patches are conspicuous, the entire exposed face on which they occur shall be rubbed.

After the final rubbing is completed, and the mortar has set up, the surface shall be thoroughly drenched and kept wet with clean water for a period of 5 days.

No rubbing will be permitted when the air temperature is below 40°F.

3. Preparation of Bridge Seat Bearing Areas.

(a) General.

Bridge seat bearing areas shall be considered to be those areas of the concrete bridge seats of the abutments, piers, and pedestals that support the bridge bearing devices. The limits of the bridge

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seat bearing area shall extend 3 in. outside of the perimeter of the bearing device component that is in contact with the bridge seat.

Bearing devices shall not be placed upon bridge seat bearing areas that are improperly finished, deformed or irregular. Bearing devices shall be set to the required grade in the exact positions called for on the plans and shall have full and even bearing upon the bridge seat cement concrete. Satisfactory drainage shall be provided as called for on the plans and where necessary to prevent water accumulation at the bridge seat bearing areas.

- (b) Bearing device installations for adjacent precast concrete deck beam bridges with spans 50 ft or less.

The bridge seat concrete as cast shall be finished to the exact final required elevation and to the roadway profile grade slope in the direction parallel to the centerline of construction and to the cross slope set by the bridge seat elevations in the direction parallel to the centerline of bearings.

- (c) For all other bearing device installations.

The surface of the concrete within the limits of the bridge seat bearing area shall be cast a minimum of $\frac{1}{4}$ in. higher than the required finished elevation. This additional concrete shall be cast monolithically with the rest of the bridge seat concrete and shall be sound and free of voids and laitance. After the concrete has been cured and thoroughly hardened, these areas shall be machine dressed down using approved methods to provide a true even surface at the following elevations and grades:

- (1) Elevations: For bearing devices where the elastomeric bearing pad is placed directly onto the as-finished bridge seat concrete surface, the surface of the bridge seat bearing area shall be dressed down to the exact final required elevation.

For bearing devices that utilize a metal masonry plate, the metal masonry plate shall be set on a system of either rubber-cotton duck bearing pads or molded fabric bearing pads and the surface of the concrete shall be dressed down sufficiently below the required finished elevation so that the rubber-cotton duck or molded fabric bearing pad will bring the bottom of the masonry plate to the exact final required elevation.

- (2) Grades: The bridge seat bearing areas shall be finished level, except that the bridge seat bearing area for adjacent prestressed concrete deck and box beams shall be finished level in the direction parallel to the centerline of construction and shall be finished to follow the cross slope set by the bridge seat elevations in the direction parallel to the centerline of bearings.

4. Bridge Approach Slabs.

After concrete is placed, the top surface shall be struck off to the proper crown and longitudinal profile with an approved template. Satisfactory supports, furnished by the Contractor, shall be set and maintained in place for proper operation of the template so that the surface shall be furnished to the required elevations. These supports shall be carefully removed from the concrete before any set of the concrete occurs, and the spaces left by such removal shall be immediately filled and finished to the level of the adjacent surfaces. The surface shall be checked, by means of an approved straightedge, not less than 10 ft in length, furnished by the Contractor, as the Engineer may direct.

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Any irregularities, measuring more than $\frac{1}{4}$ in. vertically, shall be corrected and the whole surface shall be made smooth and even. No load of any kind shall be placed on the concrete after setting of the concrete has begun, and any work on the concrete then required shall be performed from approved bridges furnished by the Contractor, which will not rest on the new concrete in any manner.

B. Curing.

All concrete shall be kept fully saturated and protected against any drying action by methods of curing specified herein or as otherwise approved by the Engineer for not less than 7 days after placing cement concrete. All surfaces of concrete which are to receive a rubbed surface finish or on which bitumen is to be placed, and concrete at construction joints shall be cured in accordance with requirements below for water curing. All other concrete may be cured in accordance with requirements below for water curing or waterproof membrane curing.

1. Mass Cement Concrete.

Cement concrete placements where all volumetric dimensions of the placement are 4 ft or greater shall be considered mass cement concrete. Mass cement concrete shall also include cement concrete placements of other dimensions where measures must be taken to mitigate potential cracking caused by heat of hydration when such placements are specifically designated as mass cement concrete on the plans. The Contractor shall perform the following to prevent cracking in mass cement concrete placements:

- Limit the temperature differential between the internal (hottest) and external (coolest) temperature of the cement concrete to 38°F and limit the maximum concrete temperature to 154°F. Heat control shall be accomplished through a combination of proper cement concrete ingredient selection to minimize heat generated, pre-placement cement concrete ingredient cooling, post-placement cooling, cement concrete placement rate control, cement concrete surface insulation to minimize heat loss, and providing supplemental heat to prevent heat loss.
- Submit for review and approval by the Engineer at least 30 days prior to the date of intended cement concrete placement, along with each mix design, a cement concrete heat of hydration analysis and a detailed plan indicating how temperature differential restrictions for mass cement concrete are to be achieved, methods of observing and recording cement concrete temperatures, and methods of applying immediate corrective action should the temperature differential approach 38°F so as to limit the temperature differential to 38°F.
- Measure and record concrete and ambient air temperatures on an hourly basis. Install 2 sets of 3 temperature sensors (thermocouples) prior to placement of concrete. Thermocouples shall be installed so that one is located 2 in. from the top of flat placements or side of vertical placements, one is located 2 in. from the bottom of flat placements or other side of vertical placements, and the third is located midway between the first and second thermocouples. The thermocouples shall be aligned vertically for flat placements or aligned horizontally for vertical placements. For flat placements, one thermocouple set shall be placed in the center of the plan location of the placement and the second set shall be placed in the plan center of one of the quadrants. For vertical placements, one sensor set shall be located at the mid-height of the placement and the other sensor set shall be located at a quarter point. An additional thermocouple shall be placed in a sheltered area that is out

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of direct sunlight, is protected from weather, and shall be used to monitor the air temperature.

The thermocouples shall operate in a minimum temperature range of -22°F to 212°F with an accuracy of 1.8°F. The Contractor shall furnish a temperature logger that records the temperatures automatically at intervals not to exceed once per hour, performs digital temperature storage, and prints temperature data to a paper tape. The thermocouples shall be connected to the recording device using Teflon-sheathed wire or shall use wireless technology. The measuring tips of the thermocouples shall be located as far away from the reinforcing steel as is practical. The thermocouple tips shall be supported with wood or plastic dowels. Thermocouple wire, if used, shall be tied to reinforcing steel bars with plastic zip ties. The thermocouple wire, if used, shall be protected from abrasion and concrete tools by securing the wire to the undersides of reinforcing steel. Temperature data shall be furnished to the Engineer as required, with a minimum frequency of once per day.

2. Water Curing.

Curing of concrete shall begin by fog spraying immediately upon the disappearance of free bleed water on concrete surfaces not protected by forms. Fog spraying shall continue until the burlap cover has been placed. The amount of fog spray shall be strictly controlled, so that accumulations of standing or flowing water on the surface of concrete shall not occur.

Should atmospheric conditions render the use of fog spray impractical, the Contractor shall use plastic covers of suitable weight and securely weighed down, but not directly in contact with the concrete. The covers shall be used only until the initial set has taken place. The burlap covers shall be placed immediately thereafter. On the windward side of the panel being cured, the Contractor shall erect canvas barriers of suitable height when necessary to protect the curing concrete from the direct force of the wind.

The area of concrete to be cured shall be covered by wet burlap blankets placed as soon after concrete finishing as the Engineer determines will not cause damage to the concrete surface. However, in no case will the foregoing time period exceed 1 hour after placing of concrete. Fog spray or covers shall be used continuously during this period. The burlap shall be completely saturated over its entire area by being submerged in water for at least 8 hours before the scheduled start of the placement. The burlap shall be drained of excess water prior to application. The burlap shall be free from cuts, tears, uneven weaving and contaminants. The burlap shall be placed such that the edges are lapped a minimum of 6 in. Burlap shall be kept continuously wet and protected from displacement for the entire curing period in a manner acceptable to the Engineer.

The materials for the coverings shall conform to the pertinent requirements for the same provided under M9.06.3: Burlap. The coverings shall be kept thoroughly wet by sprinkling with a fine spray of water until they may be removed. Wooden forms without liners, if left in place longer than 2 days after the placing of the concrete, shall be thoroughly wet down at least once each day for the remainder of the required curing period. Formed surfaces shall, after the removal of forms, be cured in like manner for the remainder of the required period, the entire surface of the concrete being thoroughly drenched with water and covered immediately after the forms are removed. Portions of the covering material may be removed temporarily when and as necessitated by any required finishing or waterproofing operation.

3. Impervious Liquid Membrane Curing.

Immediately after the free bleed water has disappeared on surfaces not protected by forms and immediately after the removal of forms, if such are removed before the end of the required curing period, the concrete shall be sealed by spraying as a fine mist a uniform application of the membrane curing material in a manner as to provide a continuous uniform, water impermeable film without marring or otherwise damaging the concrete. The impervious liquid membrane material used shall conform to the requirements for the same provided under M9.06.5: Impervious Liquid Membrane except that only ASTM C1315, Type I shall be permitted.

The membrane curing shall be applied in one or more separate coats at the rate recommended by the manufacturer. If, in the Engineer's judgment, discontinuities or pinholes exist or if rain falls on the newly coated surface before the film has dried sufficiently to resist damage, an additional coat of the material shall be applied immediately to those affected areas at the specified rate. If a slight delay in application shall occur, which permits the concrete surface to dry, the surface of the concrete shall be thoroughly moistened with water, immediately prior to the application of the membrane curing material. Application of membrane curing may be delayed for 12 hours if the concrete surface is protected and kept moist by the use of wetted burlap.

The membrane compound shall be thoroughly agitated immediately before application. The liquid shall be applied under pressure by means of an approved pressure spray which shall be held not more than 2 ft away from the concrete surface and the spray protected from any wind by suitable means as may be necessary, so as to apply the material directly onto the concrete surface.

The sprayed surface film shall be protected from abrasion or damage for the duration of the required curing period. The placing of materials or unnecessary walking on the surface will not be allowed until the film is at least 2 days old; and then only if no damage is caused to the surface film during the required curing time.

4. Curing by Other Methods.

- a. Waterproof Paper. Subject to approval by the Engineer, waterproofed paper may be used for curing particular surfaces of concrete and, if allowed, shall be furnished and used entirely in accordance with the provisions for such under 476.71: Curing, except that the length of time for the curing period shall be as specified herein.
- b. Other methods of curing may be used only when approved in writing by the Engineer prior to any use in the work.

901.66 : Placement, Finishing and Curing of Concrete Bridge Decks

This work shall consist of the placement of concrete bridge decks by using self-propelled finishing machines, all as indicated on the Plans and in accordance with these Specifications.

A. Placement and Curing Plan Submission Requirements.

At least 30 days prior to the proposed start of placing the concrete bridge deck, the Contractor shall submit to the Engineer for approval a Placement and Curing Plan that will specify all of the steps, methods, equipment and personnel that Contractor shall use to construct the concrete deck in compliance with these specifications. Approval of this plan will not relieve the Contractor of the

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responsibility for the satisfactory performance of his/her methods and equipment. The Placement and Curing Plan shall, at a minimum, specify:

1. The method that will be used to convey the concrete from the truck to all locations on the deck where it will be placed. This will also include the conveyance equipment, rate of concrete placement and the estimated time for the completion of all concrete placement, consolidation and finishing operations up to the start of curing.
2. The type and number of finishing machines and work bridges including the plan for erecting the rails and operating the finishing machine. This will include proof of the following minimum operator qualifications for the bridge deck finishing machine:
 - a. Five years' experience operating machines or similar type and manufacturer as that proposed.
 - b. Proof of no less than five bridge decks of similar size, placed using a machine of the same manufacturer as that proposed.
Or, as a substitute for a. and b.:
 - c. A representative of the manufacturer of the bridge deck finishing machine shall be present on the site a minimum of 24 hr in advance of the proposed deck placement to approve the setup of the machine and rail system, and the representative shall be present for the entire duration of the placement of the deck concrete using the bridge deck finishing machine.
3. The sequence of concrete pours, including any retarders or other concrete admixtures and dosage rates required to complete the placement, consolidation and finishing operations prior to curing in accordance with the Contractor's intended sequence of operations.
4. The provisions for consolidating the concrete including the number of vibrators and number of personnel that will be dedicated exclusively for this operation
5. The method for curing the concrete deck. This will include the number of personnel that will be exclusively dedicated for this operation, the means for pre-wetting the burlap, the location of the wet burlap at the work site, the means for conveying the wet burlap to the work bridges and the amount of wet burlap that will be required to completely cover the deck. It shall also include a letter certifying that the fogging equipment produces atomized water droplets with an average droplet diameter of 0.003 in. or less that are uniformly distributed at a rate of at least 0.10 gallons/square foot/hour .
6. Consideration of weather conditions that can be anticipated at the time of placement of the deck concrete. When cold weather can be reasonably expected either within 7 days before the anticipated concrete placement, or during the 14 day wet curing period, the Contractor shall include detailed procedures for the production, transportation, and placement of the concrete, including: provisions for enclosures to protect the placed concrete, including a plan of heating devices, types and locations around structure and the means for holding the enclosure securely in place; cold weather curing procedures; and the means for monitoring the temperature of concrete during cold weather.
7. Equipment that will be used to measure ambient air temperature, concrete temperature and relative humidity of the air at the construction site.
8. The number of all other personnel, in addition to the ones already identified in bullets 4 and 5, who will be engaged in the concrete placement operation and their assigned tasks. All personnel, including the ones already identified in bullets 4 and 5, shall have the experience and skills appropriate to their working assignment.
9. A contingency and backup plan in case of equipment failure.

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A pre-placement meeting shall be held between the Contractor and the Engineer at least 2 weeks prior to the start of any concrete placement for the deck slab. The Contractor and the Engineer shall review all aspects of the approved Placement and Curing Plan.

Twenty four hours before the scheduled start of concrete placement, the Engineer shall verify that all equipment and materials identified in the Placement and Curing Plan are onsite and have been tested to insure that they are in working order and are functioning as required. Upon the successful completion of this verification, the Engineer shall allow the concrete placement to proceed. If any equipment or material such as burlap is missing or equipment is malfunctioning, the concrete placement operations shall be canceled and shall not be re-scheduled until such time as the missing equipment or material is delivered to the site or the equipment has been repaired and is demonstrated to be in working order and functioning as required. The Contractor shall be responsible for any costs associated with the cancellation and rescheduling of the concrete placement operation that is due to missing equipment or material or malfunctioning equipment.

B. Limitations on Placement.

The requirements of 901.64: Protection from Adverse Weather, shall be satisfied in addition to the requirement of this section. Cement concrete for bridge decks shall not be placed when the ambient air temperature exceeds 85°F or is expected to exceed 85°F during the placement of the deck.

The evaporation rate of the exposed concrete surface shall not exceed 0.15 psf per hour. The deck surface evaporation rate shall be determined in accordance with Figure 901.66-1, obtained from ACI 305R-10.

The contractor shall determine the evaporation rate by measuring the ambient air temperature, relative humidity of the air at the construction site and concrete temperature prior to the placement of concrete and every hour thereafter until the end of the concrete placement, consolidation and finishing operation. Concrete temperature will be taken from the same sample used for slump and air content tests. To document the readings, Form 901.66 Bridge Deck Placement Environment will be provided by the Engineer and shall be filled out by the Contractor and returned to the Engineer.

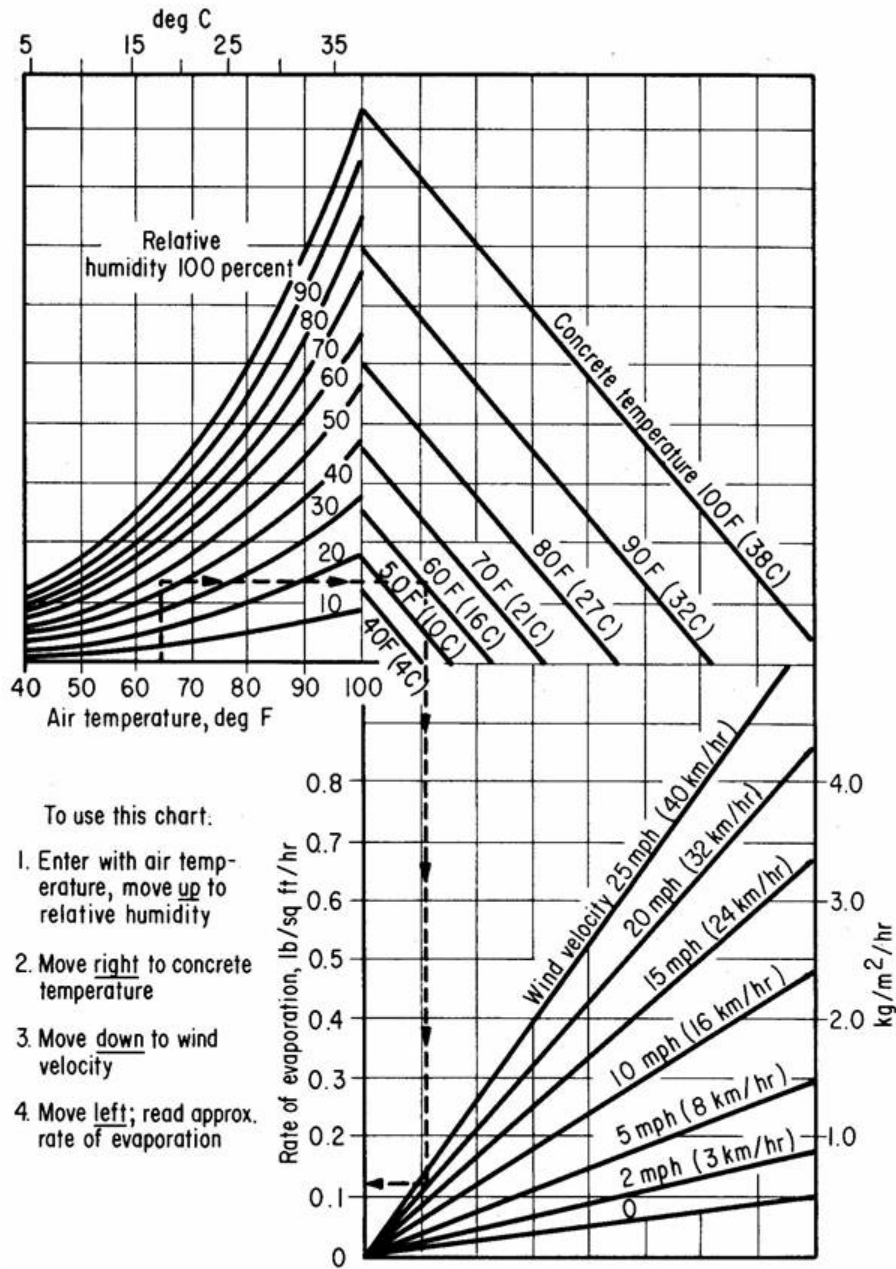
The Contractor must provide suitable equipment and take appropriate actions as approved by the Engineer to maintain limit the evaporation rate to 0.15 psf per hr or less including one or more of the following actions:

1. Misting the surface of the concrete with pressurized equipment that consists of at least two portable pressure washers, not attached to the finishing machine, and manually operated by personnel dedicated to performing fogging until the curing cover is applied. Water that drips from the nozzles shall not be allowed to fall onto the concrete that is being cured. The water mist shall be distributed at a rate of at least 0.10 gal/ ft²/hr. For example, on a deck that is 30 ft wide, the system must be able to apply at least 3.0 gal of water per linear foot per hr. The nozzles must produce an atomized fog mist that will maintain a sheen of moisture on the concrete surface without ponding. The atomized water droplets shall have an average droplet diameter of 0.003 in. or less. The area of coverage from each nozzle shall overlap all adjacent coverage areas by at least 12 in.

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2. Construct windscreens or enclosures to effectively reduce the wind velocity throughout the area of placement. If the use of windscreens is required, the windscreens shall consist of canvas barriers of suitable height erected on the windward side of the concrete placement.
3. Reduce the temperature of the concrete.
4. Reschedule the placement until such time as the environmental conditions are acceptable, such as at night or during early morning hours.

Figure 901.65-1: Deck Surface Evaporation Rate



C. Placement.

Concrete placement shall take place during daylight and shall not begin unless the Contractor is certain that the placement can be completed and finished, to the satisfaction of the Engineer, during daylight hours. The Engineer may waive this requirement if adequate and approved lighting facilities are provided by the Contractor prior to the start of the deck placement. Before concrete placement operations begin substantial bulkheads or headers shall be shaped to the required deck surface cross-section. In the event of unforeseen circumstances should the concrete placement be forced to cease, sufficient bulkheads shall be installed at locations determined by the Engineer and the concrete placement shall be discontinued. All concrete in place beyond the bulkhead shall be removed. Concrete placement will recommence only with the approval of the Engineer. The concrete shall be placed as a monolithic unit in a continuous operation between joints. A minimum rate of placement of 35 yd³ per hour shall be maintained at each finishing machine.

D. Consolidation.

The concrete shall be consolidated by means of approved high frequency internal vibrators (9,000 to 12,500 vibrations per minute in concrete) that shall be applied in a manner to ensure the consolidation of the concrete throughout the full depth of the deck in advance of the finishing machine. The Contractor shall use rubber vibrator heads or take other approved preventive measures to ensure that the vibrators will not damage the epoxy coated reinforcement. The Contractor shall have approved vibrators in service for each placement operation in accordance with Table 901.66-1. The backup vibrator shall be fully functional and shall be on site and available in case of equipment failure.

Table 901.66-1: Minimum Number of Internal Concrete Vibrators Required

Concrete Placement Rate	Number of Vibrators Required to be In Service	Total Number of Vibrators Required Including Backup
35 yd ³ to 60 yd ³ per hr	3	4
Greater than 60 yd ³ per hr	4	5

These vibrators shall be in operation in addition to the surface vibratory action from the vibrating pan(s) of the finishing machine. Consolidation by the vibrators shall leave the concrete free from voids and insure a dense surface texture, but the vibration of the concrete shall not be continued so long as to cause segregation or bleeding. A small uniform quantity of concrete shall be maintained ahead of the screed on each pass. At no time shall the quantity of concrete carried ahead of the screed be so great as to cause slipping or lifting.

E. Finishing.

1. General.

Methods, procedures, and equipment shall be used which will insure a uniform riding surface without over-vibration or segregation of the components of the concrete. The leading edge of freshly placed concrete shall at all times be maintained approximately parallel to the finishing machine.

The weight of the finishing machine(s) shall not cause unaccounted deflection of the bridge members or falsework. The machine shall travel on steel rails, pipe or other approved grade

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control, which shall be supported by vertical supports securely fastened in place at a maximum spacing of 2 ft to prevent any appreciable deflection between rail supports. Screed rail supports may be located inside or outside of the placement width. Prior to placing the concrete, screed rails shall be completely in place, and accurately set to insure finishing of the concrete deck surface to the elevations shown on the Plans. The supports for the rails, if embedded in the deck concrete, shall be of the type that can be removed without disturbing the concrete.

Screed rails shall be set entirely above the finished surface of the concrete and shall be supported in a manner approved by the Engineer. Where stud type shear connectors are available, welding to the studs will be permitted. Where no studs are available, other means of attaching the screed rail supports shall be provided. No welding will be permitted directly on stringer or girder flanges or cover plates in tension areas, nor in areas subject to stress reversal, for attaching either screed rail supports of any type. Any welding in compression areas shall be approved by the Engineer.

Screed rail supports set in the concrete shall be so designed that they may be removed to at least 2 in. below the surface of the concrete. Voids created by removal of the upper part of the screed rail supports shall be filled with mortar having the same proportions of sand and cement as that of the slab or wearing surface. The mortar shall contain an approved additive in sufficient proportions to produce non-shrink or slightly expansive characteristics. Screed rail supports shall not be treated with parting compound to facilitate their removal. Rails for finishing machines shall extend beyond both ends of the scheduled length for concrete placement. The extended length shall be of sufficient distance to allow finishing machine(s) to clear the concrete to be placed.

2. Finishing Machine: Placement Widths Less Than or Equal to 15 Feet or Bridge Lengths Less Than or Equal to 50 Ft.

For concrete deck placements specified to be less than or equal to 15 ft in width, or less than or equal to 50 ft in total bridge length, the finishing machine shall be a lightweight vibrating screed with the following features:

- a. It shall be portable and easily moved, relocated, or adjusted by no more than four persons.
- b. The power unit shall be operable without disturbing the screeded concrete.
- c. It shall be self-propelled with controls, that will allow a uniform rate of travel and by which the rate of travel can be increased, decreased, or stopped.
- d. It shall have controlled, uniform, variable frequency vibration, end to end.
- e. It shall be fully adjustable for flats, crowns, or valleys.
- f. The screed length shall be adjustable to accommodate the available work area.

The finishing machine shall be operated over the full length of the bridge segment to be finished prior to beginning of concrete placement operations. The test run of the self-propelled finishing machine shall be performed in the presence of the Engineer at least 24 hours in advance of the concrete placement with the screed adjusted to its finishing position. During the test run, checks shall be made of the deflection due to the finishing machine, adjustment of guide rails and required covers for slab reinforcement. The required concrete cover over the top bars shall be checked by riding the screed over the bars and measuring the cover over the slab reinforcement. Discrepancies so found, which are in excess of the tolerances shall be rectified to secure the required concrete cover. All necessary corrections shall be made before concrete placement is begun.

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The rate of concrete placement shall be coordinated with the initial strike-off so that the initial strike-off is never more than 10 ft behind the concrete placement.

Sufficient depth checks shall be made behind the machine(s) and along the full length of the span to insure achievement of the required section and reinforcement cover.

Improper adjustment or operation of the finishing machine(s) that results in inadequate reinforcement cover or smoothness shall be corrected immediately. Unsatisfactory performance, particularly with respect to the surface smoothness attained, shall be cause for rejection of the equipment and cement concrete placed.

3. Finishing Machine: Placement Widths Greater Than 15 Ft and Bridge Lengths Greater Than 50 Ft.

An approved bridge deck finishing machine(s) complying with the following requirements shall be used for consolidating, striking off, and finishing the concrete deck surface for concrete placements greater than 15 ft in width and bridge lengths greater than 50 ft. The finishing machine(s) shall have the necessary adjustments, built in by the manufacturer, to produce the required profile grade, cross-section, and surface smoothness. The supporting frame shall span the section being cast in a transverse direction without intermediate support. The finishing machine(s) shall be self-propelled and capable of forward and reverse movement under positive control. Provisions shall be made for raising all screeds to clear the screeded surface for traveling in reverse. The screed device shall be provided with positive control of the vertical position.

The finishing machine(s) shall be self-propelled with two or more rotating cylinder screeds. The rotating cylinder screeds shall rotate in a transverse direction while also traveling in the same direction and shall be operated transversely in overlapping strips in the longitudinal direction not to exceed 6 in. One or more powered augers shall be operated in advance of the screed(s) and a drag (pan type) float shall follow the screed(s). The surface of bridge decks that are to be left exposed without bituminous or cement concrete overlays shall receive an artificial turf drag made of molded polyethylene with synthetic turf blades that are approximately 0.5 in. long and with approximately 6,000 blades per ft² of drag. The artificial turf drag mat shall be removed and replaced with a clean artificial turf drag mat every 10 ft measured along the bridge centerline. The transversely operated rotating cylinders of the finishing machine(s) shall be rotated such that the direction of the rotation of the cylinders at the surface of the concrete is in accordance with the manufacturer's recommendations.

The finishing machine(s) shall be operated over the full length of the bridge segment to be finished prior to beginning of concrete placement operations. The test run of the self-propelled finishing machine shall be performed in the presence of the Engineer at least 24 hours in advance of the concrete placement with the screed adjusted to its finishing position. During the test run, checks shall be made of the deflection due to the finishing machine, adjustment of guide rails and required covers for slab reinforcement. The required concrete cover over the top bars shall be checked by riding the screed over the bars and measuring the cover over the slab reinforcement. Discrepancies so found, which are in excess of the tolerances shall be rectified to secure the required concrete cover. All necessary corrections shall be made before concrete placement is begun.

The rate of concrete placement shall be coordinated with the initial strike-off so that the initial strike-off is never more than 10 ft behind the concrete placement.

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Concrete immediately in front of the power auger(s) of bridge deck finishing machine(s) shall be placed or cut to a depth no higher than the center of the rotating auger(s). The concrete shall be consolidated just prior to the auger strike off. In the case where the vibratory action of the finishing machine does not provide sufficient consolidation in accordance with the rate of placement, the Contractor shall utilize approved high frequency internal vibrators (9,000 to 13,500 vibrations per minute in concrete) that shall be applied in a manner to secure maximum consolidation of the concrete. Consolidation shall leave the concrete free from voids, but shall not be continued so long as to cause segregation or bleeding. The advance auger(s) shall strike off the concrete to approximately $\frac{1}{4}$ in. above the final grade and then the concrete shall be finished to final grade.

Improper adjustment or operation of the finishing machine(s) that results in inadequate reinforcement cover or smoothness shall be corrected immediately. Unsatisfactory performance, particularly with respect to the surface smoothness attained, shall be cause for rejection of the equipment and cement concrete placed.

4. Work Bridges.

Work bridges supported on the screed rails shall be provided by the Contractor in order to permit access to the surface of the deck for the purpose of finishing, straight-edging, making corrections, and setting curing materials. The Contractor shall furnish a minimum of two work bridges behind the bridge deck finishing machine, capable of spanning the entire width of the deck and supporting at least a 500-lb load without deflection to the concrete surface. These working bridges shall be available to the Engineer for inspection purposes. Workmen will not be permitted to walk in the fresh concrete after it has been screeded. All finishing work, including application of the fog spray and placement of curing mats, shall be performed from bridges supported above the deck surface.

5. Tolerances.

Verification that the completed surface of the deck has been constructed in accordance with the grades and cross slopes specified on the contract drawings shall be made immediately after finishing and again after the deck has been cured. The Contractor shall check the surface of the concrete with a 10-ft-long metal straightedge operated parallel and perpendicular to the centerline of the bridge. Deck surfaces that are not to be overlaid with 1 in. or more of wearing surface material shall show no deviation in excess of $\frac{1}{4}$ in. from the testing edge of the straightedge. For deck surfaces to be overlaid with 1 in. or more of wearing surface material, such deviation shall not exceed $\frac{3}{8}$ in. The checking operation shall progress by overlapping the straightedge at least one half of the length of the preceding straightedge pass. Any area that requires finishing to correct surface irregularities shall be re-textured which may be performed with a hand-operated texture mat wrapped in a roll or attached to a round or curved shaped base. In the event that the tolerance is not met when tested after the concrete has hardened, variance in excess of $\frac{1}{4}$ in. in 10 ft deck surfaces not to be overlaid with 1 in. or more of wearing surface material or $\frac{3}{8}$ in. for deck surfaces to be overlaid 1 in. or more of wearing surface material shall be marked and corrected at the Contractor's expense in a manner satisfactory to the Engineer. The Contractor shall correct out of tolerance hardened concrete surface irregularities by the use of concrete planing or grinding equipment that does not damage the remaining concrete or violate minimum cover requirements on steel reinforcement.

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The straightedges shall be furnished and maintained by the Contractor. They shall be fitted with a handle and all parts shall be made of aluminum or other lightweight metal. The straightedges shall be made available for use by the Engineer when requested.

F. Curing.

All concrete bridge decks shall be kept wet with clean fresh water for a curing period of at least 14 days after placing of concrete.

Curing shall begin by fog spraying during the placing and finishing operations. Fogging shall continue and shall be applied continuously, rather than intermittently, after the finishing operation until wet covering material has been placed over the concrete surface.

All bridge decks, medians, sidewalks, and safety curbs shall be water cured only and shall be kept continuously wet for the entire curing period by covering with one of the following systems:

- a. Two layers of wet burlap,
- b. One layer of wet burlap and either a polyethylene sheet or a polyethylene coated burlap blanket.

Curing protection shall be applied within 15 minutes after the concrete is deposited and before the surface of the concrete has lost its surface “wetness” or “sheen” appearance. The burlap shall be completely saturated over its entire area by being submerged in water for at least 8 hours before the scheduled start of the placement. The burlap shall be drained of excess water prior to application. The burlap shall be free from cuts, tears, uneven weaving and contaminants. The burlap shall be placed such that the edges are lapped a minimum of 6 in. Continuous burlap wetting shall commence 10 minutes from the time it is placed and shall be kept continuously wet and protected from displacement for the entire curing period in a manner acceptable to the Engineer.

The covering of bridge decks, medians, sidewalks, and safety curbs shall be kept continuously wet for the entire curing period by the use of soaker hoses. The soaker hoses shall circulate water continuously and shall be located to insure a completely wet surface for the entire curing period.

The Contractor shall make sure that adequate personnel are available at the site to carry out the placement, screeding, finishing, fogging and curing operations simultaneously. To overcome shrinkage problems, the use of wind screens and sun shades shall be used as conditions require.

The application of impervious liquid membrane curing compounds shall not be considered a substitute for achieving the curing of the concrete required by these Specifications. Only in the event of an unavoidable delay during concrete placement shall two coats of an approved curing compound be sprayed on to the concrete that has been deposited and not screeded. The curing compound shall conform to the requirements provided under M9.06.5: Impervious Liquid Membrane, except that only ASTM C1315, Type I shall be permitted. This curing compound shall later be mixed into the concrete by the finishing machine. Curing compounds shall not be applied to the screeded surfaces of bridge decks.

The Contractor shall limit the maximum concrete temperature to 154°F, and control the temperature of the concrete to ensure that it does not fall below 57°F. Heat control shall be accomplished through a combination of proper cement concrete ingredient selection to minimize heat generated, pre-placement cement concrete ingredient cooling, post-placement cooling, cement

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concrete placement rate control, cement concrete surface insulation to minimize heat loss, and providing supplemental heat to prevent heat loss.

The Contractor shall submit for review and approval by the Engineer at least 30 days prior to the date of intended cement concrete placement, along with each mix design, a plan indicating methods of observing and recording cement concrete temperatures. The Contractor shall measure and record concrete and ambient air temperatures on an hourly basis for at least the first 72 hours after placement or longer during hot or cold weather conditions. The Contractor shall furnish temperature log records of the temperatures that are recorded at a maximum frequency of once per hour. Temperature data shall be furnished to the Engineer as required, with a minimum frequency of once per day.

G. Cold Weather Requirements.

Cold weather is defined as any time during the concrete placement or curing period the ambient temperature at the work site drops below 40°F or the ambient temperature at the site drops below 50°F for a period of 12 hours or more. When cold weather is reasonably expected or has occurred within 7 days of anticipated concrete placement, the Contractor shall include in their Placement and Curing Plan detailed procedures for the production, transporting, placing, protecting, curing, and temperature monitoring of concrete during cold weather. Procedures for accommodating abrupt changes in weather conditions shall be included. Placement of concrete shall not commence until the plan is accepted by the Engineer. Acceptance of the plan will take at least one day. All material and equipment required for cold weather placement and curing protection shall be available at the project site before commencing concrete placement. All snow, ice, and frost shall be removed from the surfaces, including reinforcement, against which the concrete is to be placed. The temperature of any surface that will come into contact with fresh concrete shall be at least 35°F and shall be maintained at a temperature of 35°F or above during the placement of concrete.

During the curing period, the Contractor shall provide suitable measures to maintain the concrete surface temperature between 57°F and 85°F which shall be monitored by continuously recording surface temperature measuring devices that are accurate within 1.8°F. At least one temperature measuring device shall be randomly placed in an accessible location for every 1,500 ft² of concrete deck surface area being cured.

The minimum concrete surface temperature requirement shall be continuously maintained for the entire 14-day wet curing period. Any day during which the minimum concrete surface temperature requirement of 57°F is not continuously maintained shall not count as a day contributing to the curing period.

If the concrete surface temperature falls below 45°F during the curing period, the structure shall be enclosed, and external heat shall be provided as directed by the Engineer. If external heat is required, the following shall apply:

1. The time required for tenting shall not be counted as curing time.
2. External heat shall be maintained on and below the structure for the entire curing period and then reduced gradually such that the uniform change in temperature does not exceed 5°F in one hour or 18°F in any 24-hour period.

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If at any time during the curing period the concrete surface temperature falls below 35°F (2°C), the concrete will be inspected by the Engineer for possible damage due to exposure to freezing temperatures. Concrete determined by the Engineer to be damaged due to exposure to freezing temperatures will be considered as being unsatisfactory and rejected.

Adequate precautions shall be taken to protect the concrete deck from any damages resulting from severe weather conditions during the curing process.

H. Surface Texturing.

The final finish required shall be as follows:

1. The finished surface of bridge decks to receive bituminous or cement concrete overlays shall be smooth without any projections that could puncture the membrane waterproofing or depressions that could retain water.
2. Bridge decks that are to be left exposed without bituminous or cement concrete overlays shall receive an artificial turf drag finish and shall be grooved using multi-bladed self-propelled sawcutting equipment. Transverse grooves shall be sawcut no sooner than completion of the 14-day wet curing operation provided that the concrete has reached a compressive strength of 3,300 psi. The grooves shall be rectangular in shape, $\frac{1}{8}$ in. wide ($+ \frac{1}{16}$ in., -0 in.) and $\frac{3}{16}$ in. deep ($\pm \frac{1}{16}$ in.). The grooves shall be cut at a variable spacing measured from the centerline of grooves as follows: $\frac{3}{4}$ in., $1 \frac{1}{8}$ in., $\frac{5}{8}$ in., 1 in., $\frac{5}{8}$ in., $1 \frac{1}{8}$ in., and $\frac{3}{4}$ in. in 6-in. repetitions across the width to be grooved in one pass of the mechanical saw device. One 6-in. sequence may be adjusted by one-quarter sequence increments to accommodate various cutting head widths provided the general pattern is carried out. The tolerance for the spacing of the grooves is $\pm \frac{1}{16}$ in.

The groove sawcutting equipment shall have a depth control device that will detect variations in the surface profile and adjust the cutting head height to maintain the depth of groove specified. The groove sawcutting equipment shall be provided with devices to control the alignment. Flailing type grooving that is uncontrolled and erratic shall not be permitted. Grooves shall be cut continuously across the roadway, perpendicular to the centerline of the roadway, and shall stop 1 ft from the curb line. Grooves shall be continuous across construction joints. At skewed metal bridge deck expansion joints and at the skewed ends of bridge decks, the groove cutting shall be adjusted by using narrow width cutting heads so that all grooves end within 6 in. of the edge of deck joint measured normal to the centerline of joint or end of deck. No un-grooved deck surface greater than 6 in. in width shall remain. A minimum clearance of 1 in. shall exist between the first groove and the end of deck or edge of metal bridge deck expansion joint. No overlapping or repeating of grooving in the same location by the grooving machine shall be permitted. The pattern of grooving shall be discussed and agreed upon with the Engineer before grooving begins. Debris and residue from the grooving operation shall be continuously removed and disposed of offsite. Residue from grooving operations shall not be permitted to flow into gutters or drainage facilities. The surface of exposed concrete decks shall be left in a washed clean condition that is free from all slipperiness from the sawcutting slurry.

A 1-ft wide margin shall be finished adjacent to curbs with a magnesium float.

I. Sidewalks and Medians on Bridges.

After being placed, the horizontal concrete surfaces shall be properly screeded and finished to true grade and surface. The finish shall be with an approved float, followed by light brushing with a fine brush but without the addition of any water to remove the cement film, leaving a fine grained, smooth but sanded texture. The surfaces shall then be cured as specified herein.

901.67 : Removal of Forms, Falsework and Loading on Structures.

The terms falsework and centering, as used herein, shall include all supports of the actual forms enclosing and supporting the concrete.

No external loads of any kind, except as provided for herein, shall be allowed until the members reach at least the designated strengths.

A. Removal of Forms and Falsework.

The forms, falsework, and centering for any portion of the structure shall not be removed until the concrete is strong enough, as determined by the Engineer, to avoid possible injury from such removal. Forms, falsework, and centering shall not be removed or disturbed without the prior approval of the Engineer. Forms, falsework, and centering shall be removed in such a manner as to permit the concrete to uniformly and gradually take the stresses due to its own weight.

When test cylinders are taken from the concrete in the members of a structure for the purpose of controlling the timing of form removal operations, the forms shall be left in place until the concrete has attained the minimum percentage of the specified design strength and, regardless of the strength attained, for the minimum period of time with test cylinder testing as designated in the following table. If test cylinders are cast for this purpose, 3 concrete cylinders shall be cast, field cured, and tested by the Contractor at an independent testing laboratory that is certified under the AAP, all at no additional cost to the project. When test cylinders are not taken from the concrete in the members of a structure for the purpose of controlling form removal operations, the minimum days without test cylinder testing designated in the following table shall be used as a guide. The number of days counted shall be measured from the time of the last placement of concrete in the forms or falsework supports and shall exclude days when the surrounding temperature is below 40°F for a total of 4 hours or more. The complete curing process shall be continued after removal of forms, falsework, or centering as required. In order to facilitate any particular finishing operations, side forms carrying no load may be removed 24 hours to 72 hours (depending on weather conditions and type of concrete) after the placing of the concrete has been completed, subject to the approval of the Engineer and with the complete curing process to be continued as required.

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Table 901.67-1: Minimum Design Compressive Strengths

Structural Member	Minimum Percentage of Specified Design Compressive Strength (f'_c)	Minimum Days with Test Cylinder Testing	Minimum Days without Test Cylinder Testing
Free standing walls, columns, and piers	40%	3 days	5 to 7 days
Arches	80%	10 days	14 to 28 days
Beams, pier cap beams, slabs, and girders with under 20 ft clear span between supports	80%	10 days	14 to 28 days
Beams, pier cap beams, slabs, and girders with 20 ft or greater clear span between supports	90%	14 days	21 to 28 days
Cantilevered beams, slabs, and girders	90%	14 days	21 to 28 days

Where continuous span structures are involved, the forms or falsework shall remain in place until the concrete in every span of the entire group of continuous spans has attained the minimum percentage of the specified design compressive strength.

Any defective work discovered after the forms have been removed shall be immediately removed and replaced. If the surface of the concrete is bulged, uneven or show excessive voids or form joint marks that cannot be repaired satisfactorily, the entire section shall be removed and replaced. All repairs and renewals due to defective work shall be done at the expense of the Contractor.

Any proposal by the Contractor to remove forms, falsework, and centering prior to the concrete attaining the specified minimum percentage of the design compressive strength must satisfy each of the following requirements:

The Engineer has reviewed and approved the Contractor's justifying calculations. The calculations must be based upon the concrete strength from the time of the proposed early removal until the concrete has attained its design strength. The calculations shall demonstrate that the capacity of the structure shall not be exceeded by computing the loads, resultant stresses, and deformations to which the concrete and reinforcing steel will be subject to at the time of the proposed removal.

The Contractor has had 3 field cured concrete cylinders tested by an independent testing laboratory immediately prior to the start of removal of forms, falsework, and centering, and all of the test results equal or exceed the anticipated strength used in the Contractor's calculations. The Engineer must accept the field curing of the 3 test cylinders as being representative of the field curing of the production concrete in order for this approval to occur.

B. Application of External Loads.

Loads shall not be applied to concrete structures until the concrete has, as determined by the Engineer, attained sufficient strength so that damage will not occur.

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Nothing, except for curing materials and related curing equipment and devices, may be carried on bridge decks until the entire 14-day wet curing operation is completed. A live load not exceeding 5,500 lb, operated at a speed not to exceed 5 mph, may be allowed on bridge deck concrete no sooner than completion of the 14-day wet curing operation provided that the concrete has reached a compressive strength of 3,300 psi. Full traffic loading shall not be allowed on bridge deck concrete until completion of the 14-day wet curing operation and until the concrete has reached its specified strength.

Precast concrete or steel beams or girders shall not be placed on substructure elements until the substructure concrete has attained 70% of its specified strength.

When the placement of backfill will cause flexural stresses in the concrete, the placement shall not begin until the concrete has reached not less than 80% of its specified strength.

901.68 : Joints

A. Construction Joints.

Construction joints not shown on the plans shall not be permitted except in case of emergency as specified in Paragraph D hereinafter.

Concrete in structures shall be placed in such a manner that all construction joints shall be exactly horizontal or vertical, as the case may be, and that they shall be straight and as inconspicuous as possible.

All concrete placed between construction joints shall be placed in a continuous operation.

In order to allow for initial shrinkage, concrete shall not be placed against the second side of the construction joint for at least 3 days after that on the first side has been placed.

When making a horizontal construction joint, care shall be taken to have the concrete below the joint as dry as possible and any excess water or creamy material shall be removed before the concrete sets. Within 12 hours after the concrete below the joint has been placed, the top surface shall be thoroughly cleaned by the use of pressurized water blast and wire brushes and all laitance and loose material removed so as to expose clean, solid concrete. Care must be taken not to loosen any of the course aggregate in the concrete. If for any reason this laitance is not removed before the concrete has hardened in place, it shall be removed using such tools and methods as may be necessary to secure the results specified above. Immediately before placing concrete above the joint, the surface of the concrete below the joint that has been cleaned as specified above shall be thoroughly pre-wetted for a minimum duration of 12 hours. On all exposed surfaces, the line of the proposed joint shall be made truly straight by tacking a temporary horizontal straight edge on the inside of the form with its lower edge on the line of the joint and then placing the concrete sufficiently higher than this edge to allow for settlement. Immediately before placing the new concrete, the forms shall be drawn tightly against the concrete already in place.

In construction joints, approved waterstops of plastic material shall be placed not less than 3 in. from the face of concrete and shall extend a minimum of 2.5 in. into the concrete.

Prior to the use of plastic waterstops, the manufacturer's installation instructions shall be furnished to the Engineer.

B. Expansion Joints.

Expansion joints constructed in bridges, walls and other structures shall be of the thickness shown and as located on the plans. The joint filler shall be cut to the same shape as the area to be covered except that it will be $\frac{1}{4}$ in. smaller along all surfaces that will be exposed in the finished work. The filler shall be fixed firmly against the surface of the concrete already in place in such a manner that it will not be displaced when the concrete is deposited against it. When necessary to use more than one piece to cover any surface, the abutting pieces shall be placed in close contact and the joint between the separate pieces shall be covered with a layer of two-ply roofing felt, one side of which shall be covered with hot asphalt to insure proper adhesion. The $\frac{1}{4}$ -in. spaces along the edges at exposed faces shall be filled with wooden strips of the same thickness as the joint material. These wooden strips shall be saturated with oil and have sufficient draft to make them readily removable after the concrete is placed.

Whatever material is used, the exposed edge of the filler shall be the finished edge as it comes from the fabricator in order to avoid exposure of material roughened by cutting. Each piece of filler shall be fastened to the concrete on one side of the joint with a single line of No. 10 gauge insulation nails 3 in. long and 12 in. on centers.

Immediately after forms are removed, the expansion joint shall be carefully inspected and any concrete or mortar that has sealed across the joint shall be cut neatly and removed. The outer edge of the joint shall be straight, parallel and satisfactory in appearance.

In expansion joints, approved waterstops of plastic material shall be placed not less than 3 in. from the face of the concrete and shall extend a minimum of 4.5 in. (115 mm) into the concrete, measured from the center line of the joint.

Prior to the use of plastic waterstops, the manufacturer's installation instructions shall be furnished to the Engineer.

All surfaces to which sealants are to be applied shall be thoroughly cleaned to remove all loose concrete, dirt, oil, grease, paint, lacquer, rust, scales, bituminous or other foreign materials. Projections of concrete into joint space shall be removed. Steel surfaces shall be sandblasted or mechanically brushed to obtain a bright, clean, metal surface. Loose particles or dirt shall be removed, and the joint shall be dried before application of primer and/or sealer. A bond breaker shall be used so that the joint sealer shall not be placed in direct contact with bituminous material or bituminous filler.

A primer shall be used, when so designated in the manufacturer's instructions. The sealant shall be mixed and applied in accordance with the manufacturer's instructions. Application shall be made only when air temperature is 50°F or over. The sealant shall be installed in a neat and workmanlike manner to the depth specified on the plans. The sealant surface shall be either flush with, or be not more than, $\frac{1}{8}$ in. above adjacent joint surfaces.

Any material that does not adhere or bond to the applied surface, or fails to set up properly, will be removed and replaced at the expense of the Contractor. Any material improperly mixed or which sets up before placement will likewise be rejected and be replaced at the expense of the Contractor.

Bonded closed cell joints shall consist of a watertight wear resistant joint system located within the joint gap as shown on the plans. The joint system shall be installed after the adjacent concrete

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structures have cured for a minimum of 14 days. The joint seal shall be installed in widths which are 20% to 25% wider than the joint gap defined on the plans. The joint seal shall be uncoiled from the shipping packaging and shall be allowed to reach a relaxed condition prior to installation. The following installation procedure shall be followed:

- A. The joint seal shall be precut to the proper lengths with splices only at the corners. Corner splices shall be made by cutting the seals on a 45° miter, bonding adjoining sections together by applying an epoxy-based adhesive to the mitered faces and holding together for one minute, and letting the spliced section remain undisturbed for one hour prior to installation;
- B. The ribbed or grooved areas of the seal shall be vigorously scrubbed with a conditioning agent using a stiff nylon brush;
- C. The ribbed or grooved areas of the seal shall then be cleaned using clean absorbent white cotton rags;
- D. All oil, grease, dirt, wax, curing compounds, and laitance shall be removed from the surfaces of the previously cast concrete prior to installation of the joint seal;
- E. The two-components of an epoxy-based adhesive shall be thoroughly mixed in accordance with the manufacturer's recommendations;
- F. The sidewalls of the joint interface shall be coated with the adhesive to a depth necessary to engage the lowest rib or groove of the joint seal;
- G. The ribs or grooves of the joint seal shall be completely covered with the adhesive;
- H. The joint seal shall then be inserted into the joint gap using a blunt tool to position the seal at the proper depth.

C. Bonding to Concrete Already Set.

In bonding new concrete to concrete already set, the surface of the concrete shall be thoroughly cleaned, roughened, wetted with clean water, and then flushed with a mortar composed of equal parts of the cement and sand specified for the new concrete, before new concrete is placed adjacent thereto. New concrete shall be placed before mortar has taken initial set. In lieu of the mortar, an epoxy adhesive suitable for bonding fresh concrete to hardened concrete for load bearing applications may be used. The epoxy adhesive shall conform to AASHTO M 235M/M 235 Type V and shall be applied in accordance with the manufacturer's recommendations.

D. Emergency.

When the work of placing concrete is unexpectedly interrupted by breakdowns, storms or other causes and the concrete as placed would produce an improper construction joint, the Contractor shall construct a construction joint to the approval of the Engineer at no additional expense to the project. When such a joint occurs at a section on which there are shearing or flexural stresses, the Contractor shall provide an adequate mechanical bond across the joint by forming a key, inserting reinforcing steel or by some other satisfactory means, which will prevent a plane of weakness.

901.69 : Weep Holes and Drains

Weep holes shall be provided through all structures as indicated on the plans and as directed. Ends of weep holes that are to be covered by filling material shall be protected by ¼-in. mesh galvanized wire screen 23 gauge and not less than 1 yd³ of screened gravel or crushed stone conforming to M2.01.1.

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Drains shall be provided for bridge superstructures as indicated on the plans.

901.70 : Protection of Pipes and Conduits

The Contractor shall care for and protect from injury all pipes, wires and conduits encountered in the work by furnishing and maintaining suitable supports, including steel bars, where directed on the bridge during construction.

The Contractor shall provide suitable openings in the abutments, walls, piers, and superstructures as shown on the plans and as may be directed. If required, the opening shall be filled with brick masonry in a satisfactory manner.

901.71 : Date, Seal, Bench Marks and Ornaments

A. Date.

The Contractor shall place a date on bridges as shown on the plans or as directed. The date used shall be the latest year of contract completion as of the date placement. The same date shall be used when placed at multiple locations on a given bridge. The date shall be cast or cut in masonry as directed. Detail drawings of the date will be furnished by the Department upon the request of the Contractor.

B. Seal.

If indicated on the plans, the Contractor shall place a bronze replica of the State Seal on Bridges, as directed by the Engineer. The seal will be furnished by the Department.

C. Ornaments.

Concrete ornaments shall be furnished and placed by the Contractor on bridges when indicated on the plans. The ornamental castings may be either cast in place or precast.

901.72 : Concrete Penetrant/Sealer

Concrete penetrant/sealer shall be applied to cement concrete surfaces if shown on the plans. This work shall consist of furnishing all necessary labor, materials and equipment to treat concrete surfaces, including surface preparation and application.

The concrete penetrant/sealer shall conform to M9.15.0: Liquid Penetrant/Sealant. Clear concrete penetrant/sealers, after complete application, shall not stain or discolor the concrete. Application of the penetrant/sealer shall not alter the surface texture and shall be compatible with the use of surface finish coatings and/or caulking. The surface shall dry to a tack free condition. Application of the penetrant/sealer shall be in accordance with the manufacturer's recommendations, including condition and preparation of surfaces to be treated and safety precautions.

The preparation process shall not cause any damage to the concrete surface, remove or alter the existing surface finish, or expose the coarse aggregate of the concrete.

The Engineer shall approve the prepared surface prior to application of the penetrant/sealer.

The Contractor shall prevent the penetrant/sealer from coming in contact with any joint sealers.

COMPENSATION

901.80 : Method of Measurement

Cement Concrete will be measured by the cubic yard and the quantity shall be determined in accordance with dimensions shown on the plans and such alteration of the plans as are specifically ordered by the Engineer in writing. No deduction shall be made in bridges for rustications, chamfered corners of dimensions less than 4 in. on the square sides, or for the volume of pipes less than 18 in. in diameter, drainage inlets, or for anchor bolts or reinforcing bars. The volume occupied by pipe culverts in headwalls shall be deducted.

Underwater Foundation Inspection shall be measured by the Unit Day of Underwater Foundation Inspection ordered by the Engineer and actually performed at the work site by each Diver that is a Professional Engineer registered in the Commonwealth of Massachusetts. Each 8-hour period for which Underwater Foundation Inspection is performed as described above shall be measured as one Unit Day. Underwater Foundation Inspection that is performed as described above for less than 4 hours on a given work day shall be measured as one half of one Unit Day. Underwater Foundation Inspection that is performed as described above for more than 4 hours, but less than 8 hours, on a given work day shall be measured as one Unit Day. Underwater Foundation Inspection that is performed as described above for more than 8 hours on a given work day shall be measured by the quantity of Unit Days determined by the actual number of hours during which Underwater Foundation Inspection is performed divided by 8 hours for each Unit Day.

Reinforcement for Cement Concrete structures shall be measured by the pound. The weight of bars shall be the product of the length as shown on the approved shop drawings and schedules and the standard weight per foot of length as adopted by the Concrete Reinforcing Steel Institute. Mechanical splicers will be measured by the product of the weight per foot of the bar being joined and the length of an AASHTO Class C lap splice. Wire, metal clips, metal chairs or other fastening and supporting devices used for keeping the reinforcement continuous and in correct position will not be considered reinforcement and the Contractor will receive no additional compensation for their use.

The weight of wire mesh (incorporated in the structure) shall be the computed weight in accordance with the plans based on the standard weight accepted by the trade for the unit area of the particular mesh.

901.81 : Basis of Payment

Cement Concrete will be paid for at the contract unit price per cubic yard under the particular item of Cement Concrete of the Class required, as shown on the plans or as directed, complete in place and accepted.

The Contractor shall have no claims for special allowances for extra cement or apparent shrinkage due to inaccurate proportioning or control, bulging of forms, spilling, waste or for any other project conditions within their control.

Payment for additional cement required to be used in proportioning by volume and in placing of concrete under water shall be included in the contract unit price paid for the particular designation of Cement Concrete specified or directed.

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Underwater Foundation Inspection shall be paid at the contract unit price per unit day of Underwater Foundation Inspection ordered by the Engineer and performed by a Professional Engineer registered in the Commonwealth of Massachusetts. Written records, final reports, recommendations, travel time, and photographic documentation shall be considered incidental to Underwater Foundation Inspection and shall not be measured for payment.

Steel reinforcement including wire mesh will be paid at the contract unit price per pound complete in place including mechanical splicers, lap splices and proper coating of the bars and splices. Fastening devices and supports for keeping the reinforcement in the correct position are considered incidental to the steel reinforcement and shall not be measured for payment.

Galvanized steel curb bars and steel dowels will be paid for at the contract unit price per pound under the item for Steel Reinforcement for Structures.

The work specified under 901.69: Weep Holes and Drains, 901.70: Protection of Pipes and Conduits, 901.71: Date, Seal, Bench Marks and Ornaments, and 901.72: Concrete Penetrant/Sealer, shall be done without extra compensation except when openings for pipes, wires and conduits are required to be blocked up, the brick masonry will be paid for at the contract unit price per cubic foot of the kind of masonry in which the opening occurs.

Holes for dowels shall be drilled by the Contractor without extra compensation.

901.82 : Payment Items

901.	4,000 psi 1.5-inch, 565 Cement Concrete	Cubic Yard
901.3	4,000 psi 1.5-inch, 565 Cement Concrete for Post Foundations	Cubic Yard
902.	3,500 psi 1.5-inch, 520 Cement Concrete	Cubic Yard
903.	3,000 psi 1.5-inch, 470 Cement Concrete	Cubic Yard
904.	4,000 psi ¾-inch, 610 Cement Concrete	Cubic Yard
904.1	5,000 psi, ¾-inch, 705 Cement Concrete.....	Cubic Yard
904.3	5,000 psi, ¾-inch, 685 HP Cement Concrete	Cubic Yard
904.4	4,000 psi ¾-inch, 585 HP Cement Concrete	Cubic Yard
905.	4,000 psi, ⅜-inch, 660 Cement Concrete	Cubic Yard
905.2	5,000 psi, ⅜-inch, 710 HP Cement Concrete	Cubic Yard
906.	5,000 psi, 1.5-inch, 660 Cement Concrete	Cubic Yard
909.9	Underwater Foundation Inspection.....	Unit Day
910.	Steel Reinforcement for Structures.....	Pound
910.1	Steel Reinforcement for Structures - Epoxy Coated	Pound
910.2	Steel Reinforcement for Structures – Coated.....	Pound
910.3	Steel Reinforcement for Structures – Galvanized.....	Pound

SECTION 31 00 00

EARTHWORK

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Provide excavating, filling, backfilling, stockpiling, bedding, compacting, grading, hauling, disposal of on-Site soils, processing of on-Site soils for reuse, testing of soils, engaging an independent geotechnical testing agency to perform required quality assurance/quality control inspection and testing, protection and other Work necessary for construction of pipelines, structures, subsurface structures, foundations, pavements, earthen embankments and appurtenant Work in accordance with this Section and applicable reference standards listed in Article 1.03.

B. Related Requirements

1. Section 01 50 00 – Temporary Facilities and Controls
2. Section 01 57 05 – Temporary Dewatering
3. Section 01 57 13 – Temporary Erosion and Sedimentation Controls
4. Section 01 57 35 – Temporary Stream Bypass
5. Section 31 10 00 – Site Clearing
6. Section 31 05 19.13 – Geotextiles for Earthwork
7. Section 31 25 00 – Erosion and Sedimentation Controls
8. Section 31 50 00 – Excavation Support and Protection

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Reference Standards

1. American Association of State Highway and Transportation Officials (AASHTO)
 - a. AASHTO M85 Standard Specification for Portland Cement
 - b. AASHTO M 295 Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
 - c. AASHTO T11 Standard Specification for Materials Finer Than 75-Micrometer (No. 200) Sieve in Mineral Aggregates by Washing
 - d. AASHTO T27 Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates
 - e. AASHTO T96 Standard Method of Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
2. ASTM International (ASTM)
 - a. ASTM C131 Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
 - b. ASTM D422 Standard Test Method for Particle-Size Analysis of Soils
 - c. ASTM D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft³ (600 kN-m/m³))
 - d. ASTM D1556 Density and Unit Weight of Soil in Place by the Sand-Cone Method
 - e. ASTM D1557 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort
 - f. ASTM D2167 Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method
 - g. ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
 - h. ASTM D2922 Density of Soil and Soil Aggregate in Place by Nuclear Methods (Shallow Depth)

- i. ASTM D2937 Standard Test Method for Density of Soil in Place by the Drive-Cylinder Method
 - j. ASTM D3017 Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
 - k. ASTM D3740 Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
 - l. ASTM D6938 Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
 - m. ASTM E329 Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection
 - n. ASTM C131 / AASHTO T-96 (Los Angeles Abrasion Test)
3. MassDOT
- a. Standard Specifications and Supplements, and Construction Details

B. Definitions

- 1. Unsuitable material: soft clay or silt, organic clays or silts, peats, debris, concrete, pavement, stones or boulders over 6 inches in diameter, wet or frozen material, and material deemed unsuitable by Owner or Engineer that will not provide suitable foundation or structural support for pipe and associated drainage structures, buildings, or other structures, and is unsuitable for use in backfill.
- 2. On-Site material: suitable material from on-Site excavation.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination, Sequencing, and Scheduling: per Division 01 General Requirements.
- 1. Pre-installation conference: conduct at Project Site at least 30 days prior to start of Work.
 - a. Required attendees: Owner and Engineer, Owner's independent testing firm and geotechnical consultant, Contractor's Superintendent, Support of Excavation (SOE) Installer, Dewatering Installer and Contractor's independent testing firm

- b. Review methods and procedures related to earthmoving including, but not limited to, the following.
 - 1) Work hours
 - 2) Personnel and equipment needed to maintain proposed construction schedule and avoid delays
 - 3) Work procedures
 - 4) Establishing and maintaining Site access
 - 5) Coordination of Work with utility locator service
 - 6) Stockpiling area and temporary access points
 - 7) Site logistics for hauling and stockpiling
 - 8) Coordination of Work and equipment movement with support of excavation systems installation
 - 9) Construction phasing, anticipated daily and weekly progress and conformance to construction schedule
 - 10) Methodology for field quality control
2. Make provisions for observations and testing of Work by Owner's independent testing and inspection agency and geotechnical consultant.

1.05 SUBMITTALS

- A. Submit in accordance with Division 01 General Requirements.
- B. Product Data
 1. Provide for each on-Site and borrow soil material or aggregate
 - a. Name of each material Supplier, specific type and source of each material
 - b. Bills of Lading documenting materials source, including Supplier name and relationship to source, location where materials were obtained; including street, town, lot and block, country and state. Include present and past usage of source Site.
 - c. Supplier's statement that material is not contaminated and is free of extraneous debris or solid waste, and description of steps taken to confirm
 - d. Product weight shipping tickets certified by Supplier

- C. Samples and Mockups: as specified in Article 1.06.
- D. Certificates
 - 1. Certification stating materials are virgin materials from a commercial or non-commercial source.
- E. Design Data/Submittals
 - 1. Materials gradation
- F. Source and Field Quality Control Submittals
 - 1. Field compaction testing
 - 2. Material testing reports for each on-Site and borrow soil material proposed for fill and backfill in accordance with ASTM D2487
 - 3. Laboratory compaction curve in accordance with ASTM D1557
 - 4. Backfill moisture-density relationships
 - 5. Submit daily field reports documenting earthwork activity and field-testing for each day. At minimum, reports to include the following.
 - a. Description of day's activities
 - b. Results of in-place density testing including in-place dry density, moisture content, percent compaction, elevation of test and description of soil
 - c. Sketch indicating extent of each day's Work and location of testing
 - 6. Daily records of over-excavated volumes including the following
 - a. Beginning and end station of over-excavation
 - b. Proposed elevation of subgrade
 - c. Actual elevation of subgrade
 - d. Calculated volume of additional excavation in bank cubic yards (BCY)
- G. Qualification Statements
 - 1. Contractor's independent testing agency, qualified for testing specified in ASTM E329 and ASTM D3740.

- H. Closeout and maintenance material submittals: per Division 01 General Requirements.

1.06 QUALITY ASSURANCE

- A. Provide in accordance with Division 01 General Requirements.
- B. Qualifications: per Division 01 General Requirements and as follows for geotechnical testing.
 - 1. Geotechnical testing agency to monitor earthwork: qualified per ASTM 329 and ASTM D3740.
- C. Independent Testing
 - 1. Minimum of 50 pounds of material in an airtight container to testing laboratory.
- D. Samples
 - 1. Each type of soil or aggregate proposed for use on Project, a minimum of 14 days prior to Work.
 - 2. Submit additional material Samples at least every 500 cubic yards throughout course of Work, if requested by Engineer to evaluate consistency of source or process.

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 off-site.
 - 2. Existing fill and excavated clay should not be used as backfill behind the proposed wingwalls and headwalls or over the proposed culvert to reduce proposed settlements. Excavated soil that cannot be reused in these areas should be regraded elsewhere on site as specified by the civil engineer and as permitted by local environmental permits or removed from the site and disposed in accordance with applicable local, state and federal regulations.

1.08 SITE CONDITIONS

- A. Existing conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 MATERIALS

A. General

1. Obtain approval of Owner and Engineer for changes in material sources.
2. Identify off-Site sources of materials and testing of materials to verify compliance with Specifications. Material may be inspected by Owner.

- B. Crushed stone: 3/4-inch sized, durable, clean angular rock fragments obtained by breaking and crushing rock material meeting MassDOT M2.01.1 criteria, free of ice, snow, sand, silt, clay, loam, shale, or other deleterious matter.

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

- C. Sand: 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	50-85
#50	10-30
#100	2-10
#200	0-3

- D. Suitable backfill: well-graded granular material. Retain at least 25 percent by weight on #4 sieve and contain less than 35 percent finer than a #200 sieve by weight, predominantly free from organic matter, man-made materials, ice, snow or other deleterious material.

- E. Gravel borrow for trench backfill: hard, durable stone and coarse sand inert material, free from loam and clay, surface coatings and deleterious material, MassDOT Division III, subsection M1.03.0, Type b. Gradation requirements: 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 b: maximum stone size = 3-inches in largest dimension

- F. Gravel borrow for roadway subbase: processed gravel for backfill per MassDOT Section M1.03.1, consisting of hard, durable stone and coarse sand inert material, free from loam and clay, surface coatings and deleterious materials. Coarse aggregate percentage of wear: maximum 50 by ASTM C131 and AASHTO T 96.

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

- G. Dense graded crushed stone for Sub-base: crusher-run coarse aggregates of crushed stone and fine aggregates of natural sand or stone screenings, uniformly pre-mixed with a predetermined quantity of water per MassDOT M2.01.7.

Sieve analysis by weight

Sieve Size	Percent Passing by Weight
2 inch	100
1-1/2 inch	70-100
3/4 inch	50-85
#4	30-55
#50	8-24
#200	3-10

- H. Refill material: 3/4-inch crushed stone for below grade or rock excavation unless otherwise directed.

- I. Common fill: friable material with no objects greater than 6 inches in diameter, no more than 30 percent by weight finer than No. 200 sieve, free from ice, snow, roots, sod, rubbish, other deleterious or organic matter, and observable contamination. Excavated material from on-Site sources meeting these Specifications may be used for common fill.
- J. Select backfill: as specified for gravel borrow with stones maximum 3 inches in diameter.
- K. Compacted structural fill: suitable bank run sand and gravel, free of clay, organic material, snow, ice, or other unsuitable materials, well-graded.

Sieve Designation	Percent Passing by Weight
3 inch	100
#4	30-90
#40	10-50
#200	0-8

- L. Drainage stone: 1-1/2-inch crushed stone per MassDOT Section M2.01.1 of durable, clean angular rock fragments obtained by breaking and crushing rock material.

Sieve Size	Percent Passing by Weight
2 inch	100
1-1/2 inch	95 - 100
1 inch	35 - 70
3/4 inch	0 - 25

- M. Controlled density fill (CDF): excavatable and used to limit settlement, lateral movement, undermining, washout and other hazards created by earthwork operations as shown on 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: MassDOT M4.02.02.
 - 4. Water: MassDOT M4.02.04.
 - 5. Air entraining admixture: MassDOT M4.02.05.
 - 6. Compressive strength: 28 day = 30-80 psi, 90 day = 100 psi.
 - 7. Slump: 10 - 12 inches.

- N. Riverstone: Shall meet the requirements of Dump Riprap, in accordance with Section M2.02.2 of the MassDOT Standard Specifications for Highways and Bridges. Rounded stone or boulders will require Engineer's approval.
- O. Lightweight Expanded Shale Aggregate (ES-LWA): lightweight aggregate fill as described in the Geotechnical Report.
 - 1. Saturated pH Levels: $5 < \text{pH} < 9$
 - 2. Saturated Resistivity: $>1,000$ ohm-cm
- P. Lightweight Recycled Glass Combined with a Foaming Agent (UL-FGA): lightweight fill as described in the Geotechnical Report.
 - 1. Saturated pH Levels: $5 < \text{pH} < 9$
 - 2. Saturated Resistivity: $>1,000$ ohm-cm

2.02 SOURCE QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions
 - 1. Check and verify governing dimensions and elevations before starting Work. Survey condition of adjoining properties with Engineer. Take digital video recording of any prior settlement or cracking of structures, pavements and other improvements. Provide list of damages, verified and signed by Contractor and Engineer.
 - 2. Coordinate survey. Establish exact elevations at fixed points to act as benchmarks. Identify benchmarks and record existing elevations. Locate datum level used to establish benchmark elevations so it will not be affected by excavation operations.
 - 3. Review geotechnical report and information for the Project. Review available logs of borings and test pits, records of explorations and other pertinent data for the Site. After obtaining Owner's permission, obtain additional subsurface explorations deemed necessary at no expense to the Owner.
 - 4. Verify subsurface utilities have been marked prior to performing excavation or earthwork and provide sufficient notification to the local Dig Safe agency.

3.02 PROTECTION

- A. Protect structures, utilities, sidewalks, pavements and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth moving operations.
- B. Protect and maintain erosion and sedimentation controls during earth moving operations.
- C. Provide protective insulating materials to protect subgrades and foundation soils against freezing temperatures or frost. Remove temporary protection before continuing Work.
- D. Prevent surface water and groundwater from entering excavations, ponding on prepared subgrades, and flooding Project Site and surrounding area.
- E. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
 - 1. Excavation will occur below water level. Complete Work in-the-dry to maintain undisturbed condition of bearing soil.
 - 2. Reroute surface water runoff away from excavated area. Do not allow water to accumulate in excavations to ensure bottoms and sides of excavations remain firm and stable throughout construction operations. Do not use excavated trenches as temporary drainage ditches.
 - 3. Install a dewatering system in accordance with Section 01 57 05 to keep subgrades dry and convey groundwater away from excavations. Maintain until dewatering is no longer required.
 - 4. Recharge water from excavations on-Site avoiding injury to public health, public and private property, existing Work, Work to be completed or in progress, roads, walks and streets, or causing any interference with the public.
 - 5. Do not place concrete or fill in excavations containing free water.

3.03 GENERAL EXCAVATION

- A. Ensure sequence of excavation operations provides efficient use of excavated materials into embankments and minimum use of borrow.
- B. Dispose of excavated materials including unsatisfactory soil materials, cobbles, boulders, and obstructions and replace with suitable backfill materials. Urban fill may be screened to remove unsatisfactory material and used requirements of suitable backfill are met.

- C. Remove and legally dispose 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 not needed for use on Project as determined by Engineer. Obtain necessary permits for legal disposal of surplus material.
- D. Unclassified excavation: excavating to subgrade elevations regardless of surface and subsurface conditions.
- E. Classified excavation: excavating to subgrade elevations. Material excavated: classified as earth and rock. Do not excavate rock until it has been classified and cross sectioned by Engineer.
 - 1. Earth excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; together with soil, boulders, and other materials not classified as rock or unauthorized excavation.
 - 2. Rock excavation includes removal and disposal of rock. Remove rock to lines and subgrade elevations indicated to permit installation of permanent construction without exceeding the following dimensions.
 - a. 24 inches outside of concrete forms other than at footings
 - b. 12 inches outside of concrete forms at footings
 - c. 6 inches outside of minimum required dimensions of concrete cast against grade
 - d. Outside dimensions of concrete walls indicated to be cast against rock without forms or exterior waterproofing treatments
 - 1) 6 inches beneath bottom of concrete slabs-on-grade
 - 2) 6 inches beneath pipe in trenches, and the greater of 24 inches wider than pipe or 42 inches wide
- F. Remove materials encountered to limits shown on Drawings, as specified or required.
- G. Do not perform excavation below normal grade to remove and replace unsuitable materials until approved by Engineer.

- H. Unauthorized excavation: removal of materials beyond indicated subgrade elevations or dimensions without specific direction.
 - 1. Refilling Unauthorized Excavation
 - a. Trenches: use 3/4-inch crushed stone or compacted structural fill and stabilization fabric as separator material as directed.
 - b. Backfill and compact unauthorized excavations as specified for authorized excavations, of same classification, unless otherwise directed.
 - c. Excavation below normal grade
 - 1) Notify Engineer to observe conditions when excavation has reached required subgrade elevations. Carry excavations deeper and replace excavated material with compacted structural fill or crushed stone if unsuitable materials are encountered at required subgrade elevations as directed.
 - 2. Excavation Above Normal Grade
 - a. Remove from Site and dispose of legally if unsuitable materials are encountered above normal grade. Do not use unsuitable materials as backfill on any portion of Project unless approved.
 - b. Use approved suitable stockpiled material to replace unsuitable material to backfill trenches to dimensions for pipe and structure bedding and backfill as shown on Drawings. Use gravel borrow to complete trench backfills to elevation shown for pipe and structure backfill if suitable stockpile material is not sufficient to backfill trenches to required dimensions.
- I. Site Clearing
 - 1. Clear site in accordance with Section 31 10 00.
- J. Material Storage
 - 1. Stockpile and maintain suitable surplus excavated materials for re-use as specified in Section 31 14 13.16.

3.04 EXCAVATION IN ASPHALT PAVEMENT AREAS

- A. Saw cut or mill to full depth through existing pavement for pipe or structure placement prior to excavation. Minimize disturbance of remaining pavement.
- B. Use shoring and bracing where sides of excavation will not stand without undermining pavement.

- C. Remove and legally dispose of existing pavements during course of Work. Avoid mixing existing pavement material with excavation material intended for backfill.

3.05 EXCAVATION FOR TRENCHES

- A. Excavate to widths shown on Drawings.
- B. Produce an evenly graded flat trench bottom at subgrade elevation required for installation of pipe and bedding material.
- C. Load excavated material directly into trucks unless otherwise approved.
- D. Place backfill material directly into trench or excavation. Do not stockpile material to be used as backfill in traffic areas.

3.06 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within tolerance of plus or minus 1 inch. Extend excavations sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and inspections.
 - 1. Excavate footings, foundations, and structures to prepared subgrade elevation 12" below the bottom of foundation by hand just before subbase and concrete reinforcement placement. Do not disturb bottom of excavation. Trim bottoms to required lines and grades to leave solid base to receive other Work.
 - 2. Do not excavate to final subgrade level until geotextile and compacted structural fill or crushed stone layer can be placed immediately to avoid softening or deterioration of formation. Leave a minimum depth of 3 feet overlying the final subgrade level in place where geotextile and compacted structural fill or crushed stone layer are not immediately placed.
 - 3. Do not allow trafficking on final subgrade or upper surface of crushed stone layer without prior placement of approved sacrificial haulage layer.
 - 4. All excavation below the crossing culvert, its foundations, and the associated headwalls shall be done in accordance with the direction described in the Geotechnical Report.
- B. Approval of Subgrade
 - 1. Notify Engineer when excavations have reached required subgrade. Remove last 6 inches just prior to inspection.

2. Clear subgrade of soft, spongy or other material unsuitable for founding. Continue excavation and replace with compacted structural fill as directed if independent inspection and testing agency or geotechnical consultant determines presence of unsatisfactory soil.
 3. Finished subgrade tolerance: plus or minus 1 inch.
 4. Seal subgrade and protect from degradation.
 5. Re-compact exposed surfaces prior to placing compacted fill or constructing foundations in accordance with Article 3.11. Engineer may waive re-compaction if integrity of subgrade soils is compromised. Do not proof-roll wet or saturated subgrades.
 6. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water or construction activities affecting final subgrade.
 7. Seal formations within 4 hours of inspection with specified geotextile and compacted structural or crushed stone fill.
 8. Install geotextiles in accordance with Section 31 05 19.13.
 9. Protect formations from loosening by traffic or resulting from high groundwater table.
 10. All subgrade preparation shall be performed in accordance with the direction described in the Geotechnical Report.
- C. Provide monitoring of geotechnical instrumentation against predefined target performance values.

3.07 PROCESSING OF ON-SITE URBAN FILL USED FOR BACKFILL

- A. Excavate urban fill where encountered in Work to designated depths and stockpile until processed.
- B. Pass on-Site cohesionless soils excavated from trench through mechanical screen to remove particles larger than 3 inches.
- C. Reuse only processed urban fill containing maximum of 5 percent by dry weight of roots, plants, sod, clay lumps or other organic or cohesive soils. Re-use of any excavated soil for backfill over the crossing culvert or behind the headwalls is prohibited.

3.08 ROCK EXCAVATION

- A. Notify Engineer immediately of change in classification. Expose bedrock surface to allow Engineer to perform an elevation survey and take cross-sectional measurements if bedrock is encountered above trench bottom grade or above subgrade elevation.
- B. Perform rock excavation by mechanical methods only. Do not blast.
- C. Remove or partially remove boulders exposed on sides or bottom of excavations as directed. Remove boulders to:
 - 1. minimum 2 feet outside structure walls;
 - 2. minimum 12 inches outside footings;
 - 3. minimum 6 inches below under-slab subgrade;
 - 4. minimum lateral trench width line limits indicated; and
 - 5. minimum 12 inches below underside of pipes.
- D. Refill depressions resulting from removal of boulders and rock with approved compacted bedding.
- E. Refill unauthorized rock excavations, or excavations made beyond or below indicated or directed excavation limits, with compacted bedding.
- F. Remove and legally dispose of unused rock and boulders off-Site.
- G. Remove and legally dispose of residual solids to limits shown on Drawings, as specified, or needed to complete Project in accordance with Laws and Regulations.

3.09 SHORING AND BRACING

- A. Provide in accordance with Section 31 50 00.

3.10 BACKFILL AND FILL

- A. General
 - 1. Suspend operations when weather conditions are unsatisfactory for placing backfill and avoid disturbing placed material and approved excavations.
 - 2. Remove and replace excavation or material previously placed that have softened or eroded, soft and yielding material, or other unsuitable or damaged areas with compacted backfill as specified.

3. Do not backfill excavations and trenches until new utilities and structures have been inspected and tested satisfactorily for conformance with Drawings and Specifications unless directed. Place soil material in layers to required elevations as shown on Drawings or specified. Fill, backfill, and compact in accordance with this Section to produce minimum subsequent settlement of material. Provide support for surface treatment or structure to be placed on material. Place material in approximately horizontal layers beginning at lowest area, maintaining drainage. Replace frozen or saturated fill in stockpiles with suitable off-Site fill.
- B. For the arched crossing culvert, its foundation and its headwalls/wingwalls: provide crushed stone beneath the foundations and lightweight aggregate backfill as described in the Geotechnical Report for backfill. Where unsuitable soils have been over-excavated replace with compacted crushed stone wrapped in geotextile fabric.
 - C. Provide compacted structural fill or backfill for all other structures, placed beneath the structures' foundations and slabs-on-grade where unsuitable soil has been over excavated below design subgrades, and against below grade walls.
 - D. Do not reuse excess excavated on-Site soils as compacted structural fill below foundations.
 - E. Ground Surface Preparation
 1. Remove asphalt and concrete pavements, granular base course, existing sandy and gravelly fills, existing organic silty clay soils, organic peat, vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface to excavation subgrade prior to placement of fills.
 2. When existing ground surface has a density less than specified for a particular area classification, break up ground surface, pulverize, moisture-condition to optimum moisture content, and compact to required depth and percentage of maximum density.
 - F. Placement
 1. Place backfill and fill materials in layers of maximum 6 inches in loose depth for material compacted by heavy compaction equipment or hand-operated tampers. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
 2. Place backfill and fill materials evenly, adjacent to structures, to required elevations. Prevent wedging action of backfill against structures by carrying material uniformly around structure to approximately same elevation in each lift.

3. Do not allow heavy machinery within 5 feet of structure during backfilling and compacting.

G. Backfilling Excavations

1. Backfill excavations promptly as Work permits and after completion of the following.
 - a. Inspection and recording locations of underground utilities and structures
 - b. Removal of concrete formwork
 - c. Removal of shoring and bracing, and backfilling of voids with satisfactory materials
 - d. Removal of trash and debris
2. Backfill under existing utility pipes crossed by new utility pipes with CDF. Extend CDF continuously from bedding of new pipe to utility pipe crossed, including a 6-inch thick envelope around existing utility pipes.
3. Backfill with CDF when clearance between proposed structure and existing structure is 18 inches or less and sufficient clearance is not provided to obtain suitable compaction.
4. Backfill with CDF for trenches within impervious surfaces with pipes containing less than 3 feet of cover.
5. Provide that 3/4 inch crushed stone backfill stands at its own angle of repose. Do not haunch or form with common fill.

H. Backfilling Trenches

1. Place pipe and structure bedding, and gravel bedding to extent and dimensions shown on Drawings so pipes and structures have complete and uniform bearing.
2. Grade, compact, and shape pipe and structure bedding so full length of pipe barrel has complete and uniform bearing. Dig bell holes and depressions for joints after bedding has been graded and compacted, at proper clearance for jointing pipes.
3. Carefully hand place and compact additional approved bedding to limits shown on Drawings following inspection and approval of pipe installation by Engineer. Perform hand or mechanical tamping on sides of pipe.

4. Place 6 inches of suitable backfill (having stones maximum 3 inches in diameter) in trenches above pipe crown; 6 inches above crown of highest pipe around structures and up to underside of pavement. Spread in layers of maximum 6 inches in loose thickness and compact as specified, and compact each layer by minimum 4 passes using approved vibratory compactor. Avoid disturbance of Work and existing structures. Adjust moisture content of backfill for proper compaction.
 5. Bed pipe in 3/4-inch crushed stone pipe and structure bedding as shown on Drawings. Remaining trench backfill: as shown on Drawings.
 6. Restore surface of trenches in cross-country runs to pre-existing conditions as shown on Drawings, mounding trench 6 inches above existing grade or as directed.
- I. Backfilling Aluminum Arch Culvert and Headwalls
1. Backfill as described in the Geotechnical Report and per the manufacturer recommendations.
- J. Earthen Embankment Fill
1. Strip organic topsoil, trees, shrubs and roots of other vegetation along length and breadth of areas having fill material placed on top. Fill depressions left by grubbing and stripping with same type material and compact to a density at least equal to surrounding foundation material.
 2. Replace unsuitable soil with compacted fill material identified by independent inspection and testing agency or Engineer.
 3. Proof roll subgrades as directed 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. Excavate and remove unsuitable material prior to placing additional fill.
 5. Dewater to maintain groundwater levels a minimum of 1 foot below bottom of excavations or subgrades. Place fill in-the-dry.
 6. Bench existing slopes prior to placing horizontal fill layers on existing slopes greater than 6H:1V.
 7. Place materials in continuous horizontal layers in loose lift thickness of maximum 8 inches.

8. Compact soil materials in accordance with ASTM D1557, with water content of plus or minus 2 percent moisture content. Remove and replace with drier fill if wet fill cannot be compacted as specified.
9. Uniformly water fill that is too dry for proper compaction with sufficient water to allow compaction to required density.
10. Compact impervious and semi pervious materials with more than 15 percent passing the #200 sieve, with a tamping sheep-foot roller or rubber-tired roller. Scarify surface before placement of next lift if compaction results in smooth surface on top of lift.
11. Remove and replace fill that is disturbed after compaction and re-compact to specified degree of compaction.
12. Place and compact soil material on embankment in a direction parallel to embankment top.

3.11 COMPACTION

- A. Use approved methods that produce required degree of compaction throughout entire depth of material placed without damage to new or existing facilities. Adjust moisture content of soil as required. Remove and replace material that is too wet to compact to required density. Compact each layer as Work progresses.
- B. Place compacted crushed stone for support of footings and foundations and against below grade walls in loose lift thicknesses not exceeding 12 inches. Compact to minimum 95 percent maximum dry density in accordance with ASTM D1557 and Sections 150 and M of the Massachusetts Department of Transportation's Standard Specifications for Highways and Bridges.
- C. Place ES-LWA, when backfilling the arch culvert and behind its headwalls to the elevations specified on the Drawings and as described in the Geotechnical Report, in lifts no greater than 12-inches thick with each lift compacted via lightweight compaction equipment to an unyielding surface. Do not use heavy rollers to compact light weight aggregate fills because the rollers may crush the material.
- D. Place UL-FGA, when backfilling the arch culvert and behind its headwalls to the elevations specified on the Drawings and as described in the Geotechnical Report, in loose lifts not exceeding 24 inches or as required by the manufacturer, whichever is less. Each Lift shall be uniformly distributed and compacted with at least two passes and a maximum of four passes of hand-operated vibratory compaction equipment (refer to manufacturer instructions for appropriate hand-operated compaction equipment) until the lightweight fill appears stable during compaction. Avoid excessive compaction to minimize crushing of the aggregate.
- E. Place backfill in open areas with self-propelled vibratory rollers, and hand-guided equipment in confined areas. Loose lift thickness: maximum 6 inches.

- F. Perform a minimum of 4 systematic passes to compact each lift with specified compaction equipment.
- G. Place backfill and fill soil materials evenly on sides of structures to required elevations, and uniformly along full length of each structure.

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 pounds in confined areas	6 inches	10 inches	12 inches	4	4
Light vibratory drum roller minimum weight at drum 5,000 pounds, minimum compaction force 10,000 pounds	8 inches	6 inches	18 inches	4	4
Medium vibratory drum roller min. weight at drum 10,000 pounds, minimum compaction force 20,000 pounds	8 inches	6 inches	24 inches	6	6

H. Degree of Compaction

Fill and Backfill Location	Minimum Density
Top 3 feet under pavement grade	95 percent of maximum
Below slabs and foundations	95 percent of maximum
Below top 3 feet under pavement grade	92 percent of maximum
Pipe Bedding	92 percent of maximum
Beside structure foundation walls	95 percent of maximum
Maximum density	ASTM D698, modified
Field density tests	ASTM D1556 (sand cone) or ASTM D6938 (nuclear methods)

- I. Disc harrow or dry fill material that is too wet for compaction to specified moisture content and to required density. Remove and replace with drier fill that cannot be dried within 48 hours of placement.

3.12 GRADING

- A. Uniformly grade areas, including adjacent transition areas. Smooth finished surface within specified tolerances. Compact with uniform levels or slopes between points where elevations are shown, or between points where elevations are shown and existing grades.
- B. Grade areas adjacent to structure lines to drain away from structures and prevent ponding.
- C. Finish surfaces: free from irregular surface changes and as follows.
 - 1. Finish lawn or other unpaved areas to receive topsoil to within a maximum 0.10 feet above or below required subgrade elevations.
 - 2. 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.

3.13 RIPRAP

- A. Place riprap to depths depicted on drawings 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.

3.14 EROSION CONTROL

- A. Provide erosion control measures in accordance with Section 01 57 13 and Section 31 25 00.

3.15 PROTECTION

- 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. Scarify surface, re-shape, and compact to required density prior to further construction where completed compacted areas are disturbed by subsequent construction operations or adverse weather. Immediately repair any subsequent settling and provide maintenance for remainder of Work.

- C. Remove soft or unsuitable material and replace with suitable backfill material prior to paving on sub-grade. Bring low sections, holes, or depressions to required grade with approved material. Shape sub-grade to line, grade, and cross section, and thoroughly compact.
- D. Keep roads free of debris. Use watertight vehicles for hauling wet materials over roads and streets. Promptly clean materials dropped or spread by vehicles or when directed by Engineer.

3.16 FIELD QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.
- B. Perform at least 1 test of each soil stratum at foundation subgrades to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on visual comparison of subgrade with tested subgrade when approved.
- C. Engage an independent testing agency to test compaction of soils in place in accordance with ASTM D1556, ASTM D2167, ASTM D2922, and ASTM D2937.
 - 1. Tests
 - a. Paved and structure areas: at subgrade and each compacted fill and backfill layer, at least 1 test for every 2,000 square feet or less of paved area or concrete slab, with minimum 3 tests.
 - b. Foundation walls backfill: at each compacted backfill layer, at least 1 test for every 100 feet or less of wall length, with minimum 2 tests.
 - c. Trench backfill: at each compacted initial and final backfill layer, at least 1 test for every 150 feet less of trench length, with minimum 2 tests.
 - 2. Scarify and moisten or aerate, or remove and replace soil materials to depth required when testing agency reports subgrades, fills, or backfills have not achieved degree of compaction specified. Re-compact and re-test until specified compaction is obtained.
 - 3. Determine actual in-place densities using field tests as directed.
 - 4. Perform additional Work to obtain proper compaction if in-place densities do not meet specified densities. Retest if directed by Engineer.
 - 5. Tests for Pipe Backfill
 - a. Suitable backfill: compact backfill in maximum loose lifts per table above. Conduct 1 field density test every 50 linear feet for each lift for utility lines.

- b. Pavement sub-base: minimum 1 field density test of sub base for every 50 linear feet of paved area.

3.17 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Division 01 General Requirements.

END OF SECTION

SECTION 31 05 19.13

GEOTEXTILES FOR EARTHWORK

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Provide and install permanent geotextile fabrics in accordance with this Section and applicable reference standards listed in Article 1.03.
- B. Related Requirements
 - 1. Section 31 00 00 - Earthwork

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

- A. Reference Standards
 - 1. ASTM International (ASTM)
 - a. ASTM D4354 Standard Practice for Sampling of Geosynthetics and Rolled Erosion Control Products (RECPs) for Testing
 - b. ASTM D4355 Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc-Type Apparatus
 - c. ASTM D4491 Standard Test Methods for Water Permeability of Geotextiles by Permittivity
 - d. ASTM D4533 Standard Test Method for Trapezoid Tearing Strength of Geotextiles
 - e. ASTM D4595 Standard Test Method for Tensile Properties of Geotextiles by the Wide-Width Strip Method
 - f. ASTM D4632 Standard Test Method for Grab Breaking Load and Elongation of Geotextiles
 - g. ASTM D4751 Standard Test Methods for Determining Apparent Opening Size of a Geotextile

- h. ASTM D4759 Standard Practice for Determining the Specification Conformance of Geosynthetics
- i. ASTM D4873 Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples
- j. ASTM D4884 Standard Test Method for Strength of Sewn or Bonded Seams of Geotextiles
- k. ASTM D5321 Standard Test Method for Determining the Shear Strength of Soil-Geosynthetic and Geosynthetic-Geosynthetic Interfaces by Direct Shear
- l. ASTM D6241 Standard Test Method for Static Puncture Strength of Geotextiles and Geotextile-Related Products Using a 50-mm Probe

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: manufacturer's product specifications.
- C. Samples and Mockups: as specified in Article 1.06.
- D. Manufacturer's instructions for storage, handling, and installation of geotextiles
- E. Source and Field Quality Control Submittals: manufacturing quality control certificates for representative rolls for each lot of material delivered.
- F. Qualification statements of manufacturer
- G. Closeout and maintenance material submittals: per Division 01 General Requirements.

1.06 QUALITY ASSURANCE

- A. Provide in accordance with Division 01 General Requirements.
- B. Qualifications: per Division 01 General Requirements and as follows.
 - 1. Geotextile manufacturer: well-established firm with minimum 2 years' experience in manufacture of geotextile fabrics.

- C. Samples
 - 1. Swatch of each geotextile fabrics

1.07 DELIVERY, STORAGE AND HANDLING

- A. Provide in accordance with Division 01 General Requirements.
- B. Deliver and store geotextile materials in protective wrapping to protect materials from ultraviolet (UV) radiation, and other mediums that may reduce physical properties of the material.
- C. Labeling, packaging, and handling: per ASTM D4873.
- D. Submit manufacturing quality control certificates for representative rolls for each lot of material delivered to the Site, signed, and certified by responsible parties employed by manufacturer. Materials delivered without testing certification shall be rejected by the Engineer.
- E. Store geotextiles off ground and out of direct sunlight. Protect from mud, dirt, dust, and moisture. Use unbroken opaque packaging or provide protective cover to prevent exposure of the geotextile to sunlight during storage. Comply with additional storage procedures recommended by the manufacturer at no additional cost to Owner.
- F. Store rolls on a surface that does not cause distortion of roll or wraps or impedes installation.
- G. Do not stack rolls higher than recommended by the manufacturer.
- H. Load, unload, and move rolls with appropriate equipment as recommended by manufacturer.
 - 1. Move rolls using structural steel insert (pipe) placed within core tube of roll. Attach lifting slings or chains to pipe only to support the roll. Prevent damage by slings and chains through use of a spreader bar. If a forklift is used to move rolls, use a single tooth pipe capable of supporting the roll in cantilever and place through roll core tube. Do not lift rolls by sliding the forks under the roll.
- I. Provide a sufficient quantity of geotextile material on Site prior to start of Work to allow efficient and continuous Work without stoppage resulting from lack of materials.

1.08 SITE CONDITIONS

- A. Existing conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 GEOTEXTILES

- A. Use woven geotextile stabilization fabric as shown on Drawings and directed by the Engineer or Owner in accordance with this Specification.
- B. Furnish stock materials with Minimum Average Roll Values (MARV) that meet or exceed the criteria specified in below. Strength properties specified are for the weaker principle direction.
 - A. Acceptable level of quality: equivalent to the following.
 - 1. Non-Woven Geotextile Fabric – Mirafi 180N
 - B. Criteria
 - 1. Nonwoven Geotextile Fabric

PROPERTY	TEST METHOD	STANDARD	SPECIFIED VALUE
Material	--	--	Polypropylene
AOS	ASTM D4751	maximum	No. 80 U.S. Sieve
Grab Tensile Strength	ASTM D4632	MARV	205 lbs/in
CBR Puncture Strength	ASTM D6241	MARV	500 lbs.
Trapezoidal Tear Strength	ASTM D4533	MARV	80 lbs.
Permittivity	ASTM D4491	MARV	1.4 sec ⁻¹

2.02 SEWING THREAD FOR SEAMING

- A. Type: polyester with chemical and UV light resistance properties, equal to or greater than the fabric itself. Color: contrasting to color of fabric.

2.03 SOURCE QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.
- B. Provide for sampling and testing of geotextile by manufacturer as specified in the table in Article 2.01 at a minimum of once every 100,000 square feet of production to demonstrate that material conforms to requirements the table.
- C. Obtain quality control certificate that includes roll number identification, sampling procedures used, and results of quality control testing, including descriptions of test methods used per quality control tests specified in the table in Article 2.01.

- D. Require manufacturer to perform additional testing at no additional cost to Owner if geotextile sample fails to meet this Specification including the following.
 - 1. Sample and test each roll manufactured in same lot or at the same time as the failing roll.
 - 2. Continue sampling and testing of rolls until a pattern of acceptable tests results is established.
 - 3. Additional testing of individual rolls may be performed by manufacturer to more closely identify the non-complying rolls and to qualify individual rolls.
- E. Obtain manufacturer notarized certificates indicating the material meets this Specification.
- F. Require geotextile fabric be supplied in rolls and labeled at a minimum according to ASTM D4873 with the following information.
 - 1. Manufacturer's Name
 - 2. Product Identification (style number)
 - 3. Roll Number
 - 4. Roll Weight
 - 5. Roll Dimensions
 - 6. Geotextile Type

PART 3 – EXECUTION

3.01 PREPARATION

- A. Prior to installation, Samples of geotextiles will be taken by the Engineer and sent to a laboratory for testing to ensure conformance with this Specification in accordance with ASTM D4354, Procedure A. Cost testing: by Contractor.
 - 1. Sample size: 3 feet by full roll width exclusive of the first 3 feet of the rolls, which will be discarded. Immediately rewrap sampled rolls and return to storage.
 - 2. One sample will be collected for every 100,000 square feet of material. At a minimum, each lot of material defined as a group of consecutively numbered rolls manufactured from the same production line, will have 1 sample collected and tested for conformance.

- B. At a minimum, the following conformance tests will be performed on each sample of geotextile.
 - 1. Grab strength: ASTM D4632.
 - 2. Trapezoidal tear strength: ASTM D4533.
 - 3. CBR puncture: ASTM D6241.
- C. If Sample testing fails, Engineer will implement procedures outlined in ASTM D4759 which describes a method of resampling to define extent of nonconforming material.

3.02 INSTALLATION

- A. Install where shown on Drawings in accordance with manufacturer's instructions.
- B. Provide smooth graded surface, free of large stones, tree roots and limbs, or other debris prior to placement of geotextiles. Notify Engineer when areas are ready for placement of geotextile.
- C. Deployment and Covering
 - 1. Unroll fabric in area to be used, in down-slope direction.
 - 2. Minimize wrinkles and folds in the geotextile. Straighten to smooth out creases or irregularities in the sections. Place geotextile in close contact with adjacent materials. Overlap adjacent fabric sides and ends minimum of 12 inches. Do not allow gaps and tears. Place overlaps so uphill panel is shingled over the downhill panel. Replace damaged geotextile.
 - 3. Begin placement at base of slope and proceed up-slope for overlying stone. Work in direction of fabric overlap for overlying stone placement on flat areas. Ensure fabric overlap remains intact. Install in a relaxed condition and free of tension or stress upon completion. Do not stretch geotextile to fit.
- D. Protection
 - 1. Secure geotextile from wind damage during and after construction.
 - 2. Do not allow construction equipment to travel directly over any in-place geotextiles. Maintain 1-foot minimum cover above fabrics for low ground pressure tracked vehicles (contact pressure 8-psi or less) and 3-foot minimum cover for wheeled vehicles or heavy tracked vehicles (contact pressure above 8-psi).

3. Do not allow more than 14 days to elapse between the day when reinforcing geotextile is unrolled and when a subsequent layer is placed to cover it. do not allow more than 30 days to elapse between the day when the cushioning geotextile is unrolled and when a subsequent layer is placed to cover it. Replace material exposed to sunlight or weather for longer duration.

E. Patching

1. Patch rips and tears with a minimum 3-foot overlap in each direction from perimeter of damaged area. Heat bond repair patch to underlying geotextile.
2. For damaged areas greater than half the width of fabric roll, cut out entire roll-width of damaged area and place a new section laced over the area with minimum 3-foot overlap at each end. Place up-slope end of patch under existing up-slop fabric and place down-slope end of patch over down-slope fabric.

3.03 FIELD QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.

3.04 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Division 01 General Requirements.

END OF SECTION

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SECTION 31 05 19.14

HDPE LINERS FOR EARTHWORK

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Provide and install permanent high-density polyethylene (HDPE) liners in accordance with this Section 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. Reference Standards

1. ASTM International (ASTM)
 - a. ASTM D792 Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement
 - b. ASTM D1004 Standard Test Method for Tear Resistance (Graves Tear) of Plastic Film and Sheeting
 - c. ASTM D1505 Standard Test Method for Density of Plastics by the Density-Gradient Technique
 - d. ASTM D1603 Standard Test Method for Carbon Black Content in Olefin Plastics
 - e. ASTM D4833 Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products
 - f. ASTM D5596 Standard Test Method for Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics
 - g. ASTM D6392 Standard Test Method for Determining the Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods
 - h. ASTM D6693 Standard Test Method for Determining Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes

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: manufacturer's product specifications.
- C. Samples and Mockups: as specified in Article 1.06.
- D. Manufacturer's instructions for storage, handling, and installation of geotextiles
- E. Source and Field Quality Control Submittals: manufacturing quality control certificates for representative rolls for each lot of material delivered.
- F. Qualification statements of the manufacturer
- G. Closeout and maintenance material submittals: per Division 01 General Requirements.

1.06 QUALITY ASSURANCE

- A. Provide in accordance with Division 01 General Requirements.
- B. Qualifications: per Division 01 General Requirements and as follows.
 - 1. HDPE liner manufacturer: well-established firm with minimum 2 years' experience in manufacturing HDPE liners.
- C. Samples
 - 1. Swatch of selected HDPE liner

1.07 DELIVERY, STORAGE AND HANDLING

- A. Provide in accordance with Division 01 General Requirements.
- B. Deliver and store liner materials in protective wrapping to protect materials from ultraviolet (UV) radiation, and other mediums that may reduce physical properties of the material.
- C. Labeling, packaging, and handling: per requirements in Article 2.02.
- D. Submit manufacturing quality control certificates for representative rolls for each lot of material delivered to the Site, signed, and certified by responsible parties employed by manufacturer. Materials delivered without testing certification shall be rejected by the Engineer.

- E. Store liners off ground and out of direct sunlight. Protect from mud, dirt, dust, and moisture. Use unbroken opaque packaging or provide protective cover to prevent exposure of the liner to sunlight during storage. Comply with additional storage procedures recommended by the manufacturer at no additional cost to Owner.
- F. Store rolls on a surface that does not cause distortion of roll or wraps or impedes installation.
- G. Do not stack rolls higher than recommended by the manufacturer.
- H. Load, unload, and move rolls with appropriate equipment as recommended by manufacturer.
 - 1. Move rolls using structural steel insert (pipe) placed within core tube of roll. Attach lifting slings or chains to pipe only to support the roll. Prevent damage by slings and chains through use of a spreader bar. If a forklift is used to move rolls, use a single tooth pipe capable of supporting the roll in cantilever and place through roll core tube. Do not lift rolls by sliding the forks under the roll.
- I. Provide a sufficient quantity of liner on Site prior to start of Work to allow efficient and continuous Work without stoppage resulting from lack of materials.

1.08 SITE CONDITIONS

- A. Existing conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 LINERS

- A. Use liner as shown on Drawings and directed by the Engineer or Owner in accordance with this Specification.
- B. The HDPE liner shall have a 40-milimeter nominal thickness, as specified on the Drawings, and be specifically manufactured to be suitable for use in exposed and buried conditions.

Furnish stock materials with Minimum Average Roll Values (MARV) that meet or exceed the criteria specified. The strength properties specified are for the weaker principle direction. Acceptable level of quality for HDPE membrane liner: equivalent to AGRU America 40-mil HDPE liner.

- C. Criteria
 - 1. HDPE Membrane Liner

PROPERTY	TEST METHOD	SPECIFIED VALUE
Material	--	HDPE
Density	ASTM D1505/D792	≤ 0.940 g/cc
Tensile Yield Stress	ASTM D6693 (Type IV at 2 in/min)	84 lb/in
Tensile Break Stress		152 lb/in
Tensile Yield Elongation		12%
Tensile Break Elongation		700%
Tear Resistance	ASTM D1004	28 lb
Puncture Resistance	ASTM D4833	72 lb
Carbon Black Content	ASTM D1603	2-3%
Carbon Black Dispersion	ASTM D5596	Category 1 or 2
Fusion Weld Shear Strength	ASTM D6392	80 lb/in
Fusion Weld Peel Strength		60 lb/in
Extrusion Weld Shear Strength		80 lb/in
Extrusion Weld Peel Strength		52 lb/in

2.02 SOURCE QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.
- B. Provide for sampling and testing of liner by manufacturer as specified in the table in Article 2.01 above at a minimum of once every 100,000 square feet of production to demonstrate that material conforms to requirements the table.
- C. Obtain quality control certificate that includes roll number identification, sampling procedures used, and results of quality control testing, including descriptions of test methods used per quality control tests specified in the table in Article 2.01 above.
- D. Require manufacturer to perform additional testing at no additional cost to Owner if liner sample fails to meet this Specification including the following.
 1. Sample and test each roll manufactured in same lot or at the same time as the failing roll.
 2. Continue sampling and testing of rolls until a pattern of acceptable tests results is established.
 3. Additional testing of individual rolls may be performed by manufacturer to more closely identify the non-complying rolls and to qualify individual rolls.
- E. Obtain manufacturer notarized certificates indicating the material meets this Specification.
- F. Require liner to be supplied in rolls and labeled at a minimum according to the following.

1. Manufacturer's Name
2. Product Identification (style number)
3. Roll Number
4. Roll Weight
5. Roll Dimensions
6. Thickness of Liner

PART 3 – EXECUTION

3.01 PREPARATION

A. Subgrade Preparation

1. The area to be lined shall be drained and allowed to dry until the surface is firm. The surface must support people and equipment that must travel over it during installation of the geomembrane liner. All cut and fill slopes shall be constructed in accordance with the Drawings.
2. The foundation area shall be smooth and free of projections that can damage the geomembrane. Stumps and roots shall be removed. Rocks (larger than 3/8-inch and all fractured rocks), hard clods, and other such material shall be removed, rolled with a smooth-wheeled vibratory roller, or covered with a compacted cushion of fine soil. Surface deformations from equipment tracks or footprint indentations shall not exceed 1 inch. Standing water, mud, and snow shall be removed prior to liner placement.
3. An anchor trench for the liner shall be excavated and backfilled in accordance with the Drawings. The trench corners shall be slightly rounded to prevent sharp bends in the liner.

3.02 INSTALLATION

A. Placement

1. The placement of the geomembrane liner shall be performed by an experienced Contractor. The installation shall comply with the manufacturer's procedures and specifications.
2. The geomembrane liner rolls shall be deployed using a spreader bar assembly attached to a loader bucket or by other methods approved by the liner manufacturer. The method chosen to unroll the panels shall not cause scratches or crimps in the geomembrane and shall not damage the supporting soil or any underlying geotextile. The liner rolls shall not be deployed by allowing the roll to run freely down the slope.
3. The liner shall not be placed in the presence of excessive winds, during foggy conditions, or precipitation events. The liner shall not be placed when the temperature is less than 50° F unless approved by the manufacturer.
4. The liner shall be loosely spread over the foundation with sufficient slack to accommodate thermal expansion and contraction expected during construction. Sufficient slack shall be provided near all points of solid anchorage (pipe penetrations, etc.) to accommodate thermal expansion and contraction expected prior to final acceptance of the work. Any damage due to inadequate slack in the liner shall be the responsibility of the geomembrane installer and shall be repaired.
5. Each panel shall be laid out and positioned to keep the number and length of the liner field joints to a minimum and consistent with proper methods of liner installation. The method used to place the panels shall minimize wrinkles especially along field seams. Wrinkles shall not exceed 6 inches in height or "fold over."
6. Seams shall be oriented down, not across the slope. No horizontal seams are allowed on the side slopes or within 5 feet of the toe or crest of a side slope. Sharp corners shall be avoided. On the floor of a facility, up slope panel overlaps shall shingle down slope. Horizontal and T-shaped seams shall not be placed on slopes. All T-seams or seams where three or more panels come together shall include a minimum 24-inch diameter extrusion welded patch centered over the seam intersection and installed in accordance with this specification. No base T-shaped seam shall be closer than 5 feet to the toe of the side slope. Seams shall be aligned with the least possible number of wrinkles or "fish mouths." All fish mouths shall be cut out and the area repaired by patching.
7. Adequate loading (e.g., sand bags or similar items that will not damage the liner) shall be placed to prevent relocation of the compensating wrinkles or uplift of the liner by wind.

8. The top edge of the liner shall be placed in the anchor trench and anchored with compacted backfill. Compact the backfill by wheel rolling with light rubber-tired equipment or a manually directed power tamper.
9. Construction equipment contact is not allowed to operate directly on the liner.
10. Equipment to be maintained such that no petroleum products come into contact with the liner.
11. No equipment or tools shall damage the liner by handling, traffic, or by other means. Personnel working on the liner may not smoke, wear damaging shoes, or engage in other activities that could damage the liner. Use of metal tools to be kept to a minimum.

B. Seaming

1. Seaming is not allowed during precipitation events. Parallel welds must be separated by a distance of at least 6 inches.
2. Clean areas that are to become seam interfaces of dust and dirt. Seaming may not take place unless liner material is dry. Seaming may not be attempted when the ambient sheet temperature is below 45 degrees F or above 90 degrees F unless it can be demonstrated that competent welds can be achieved down to 32 degrees F or up to 125 degrees F sheet temperature.
3. Hot Wedge Seams
 - a. Field seams shall be made by overlapping adjacent liner panels a minimum of 4 inches and fusion welding the overlapped sheets using double-wedge fusion welders. Seams between panels shall be field welded using the installer's seaming apparatus and technique.
4. Fillet Extrusion Seams
 - a. Extrusion welding to be used only at areas which cannot be welded by using the double-wedge fusion welder. For extrusion welds, the liner to be abraded by light grinding, preheated and pressed together to align for welding. Minimum overlap of liner panels shall be 3 inches.

C. Appurtenances

1. Fabricate pipe boots in the field from the same liner shown on Drawings. Clamp pipe boots as shown on Drawings to provide a leak-free attachment.

D. Repairs

1. Repair tears, punctures, or material defects in the liner by installation of a patch over the defective area. Clean surfaces of the liner to be patched no more than 15 minutes prior to the repair. Provide patches made of the same liner material and extend a minimum of 6 inches beyond the edges of the defect area. Patches to have rounded corners and be seamed to the liner. Repair small holes less than 1/4 inch in diameter by applying a bead of welding extruder.
2. Repair failed seams by installing a cap strip over the entire length of the failed seam. The cap strip to be of the same liner material and extend beyond the failed seam a minimum of 6 inches in all directions.

3.03 FIELD QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.

3.04 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Division 01 General Requirements.

END OF SECTION

SECTION 31 10 00

SITE CLEARING

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Provide Site clearing and grubbing in accordance with this Section.
- B. Related Requirements
 - 1. Section 31 00 00 – Earthwork

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

- A. Definitions
 - 1. Clearing: cutting and disposing of trees, downed timber, stubs, brush, bushes, snags, rubbish, debris, and other objectionable matter and materials, and removal and storage of fences, signs, walks, guard rails, curbs and items to be restored.
 - 2. Grubbing: removal and disposal of stumps, roots, duff, foundations and other objectionable matter, and materials to a minimum of 6 inches below original ground surface.
 - 3. Topsoil: friable loam surface soil found in a depth of not less than 4 inches from original ground surface. Satisfactory topsoil: reasonably free of subsoil, clay lumps, stones, and objects over 2 inches in diameter, and free of weeds, roots, and other objectionable material.

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. 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. Store trees, plants and shrubs in protected areas and provide water to keep them in thriving condition for replanting.
- C. Store slate and flagstone walk sections, granite and stone curbs, fences, signs, guard rails and other items removed for reinstallation at approved locations.
- D. Do not obstruct roads, driveways, sidewalks, gutters and drainage ditches, swales and channels with stored materials.

1.08 SITE CONDITIONS

- A. Existing conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verification of Conditions
 1. Verify Site conditions. Trees, plantings, vegetation, sidewalks, curbs and other living and nonliving item locations shown on Drawings were determined by actual surveys and conditions may have changed.
 2. Verify limiting boundaries, such as permanent and temporary easements, property lines, rights-of-way and grading limits, have been located and marked.
 3. Verify pipeline routings and other items of Work have been located and marked.

3.02 PREPARATION

- A. Mark trees, plantings and other items to be removed, trimmed, cut, or removed and preserved. Inspect items with Engineer prior to start of Work. Do not remove or trim unmarked items unless approved by Engineer.

- B. Protect existing trees and vegetation indicated to remain in place against cutting, breaking or skinning of roots, skinning and bruising of bark, smothering by stockpiling construction or excavated materials within drip line, excess foot or vehicular traffic, or vehicle parking within drip line. Provide temporary guards to protect trees and vegetation to be left standing.
- C. Protect existing objects. Avoid interference with use of, and passage to and from adjacent buildings, facilities, driveways, walks, drainage systems and road.
- D. Remove highway signs, guard rails and other control, safety, and warning devices just prior to installation of Work.
- E. Notify affected property owners at least 4 days in advance of fence removal. Do not remove fencing more than 48 hours in advance unless written permission is received from property owner.
- F. Leave items affecting traffic, safety, containment of humans and animals, and essential to protection of property or operation of a business, in place until Work is ready to be installed. Restore items immediately after installation.

3.03 IMPLEMENTATION

- A. General
 - 1. Use of explosives for clearing and grubbing operations is not allowed.
 - 2. Limit clearing and grubbing to preserve plantings and natural vegetation. Perform Work so present growth will blend with limits of construction and attain natural appearance.
 - 3. Confine clearing and grubbing operations within grading limits as shown on Drawings, and within Owner easements and property lines.
 - 4. Provide measures to avoid erosion.
 - 5. Do not disturb property markers unless absolutely necessary. If necessary to disturb or remove a property marker, employ a professional land surveyor licensed in the state where the Project is located to establish property marker location; mark area, and replace property marker immediately, in compliance with Division 01 General Requirements.
- B. Stripping Topsoil
 - 1. Strip topsoil within limits indicated on Drawings, or as required to prevent mixing with underlying subsoil or objectionable material.
 - 2. Prevent damage to main root system of trees indicated to be left standing.

3. Stockpile topsoil in areas shown on Drawings, or where directed, and provide for drainage of surface water. Protect stockpiles to prevent windblown dust and erosion.
 4. Stockpile surplus material on-Site. Surplus loam and topsoil not required for completion of Work will remain on Owner's property. Maintain and protect until Work is complete.
- C. Trees and Plantings
1. Remove only items marked for removal in grassed, planted and open areas.
 2. Trees
 - a. Notify property owners 1 month in advance of tree trimming or removal to allow property owner to cut and remove trees and retain debris, unless otherwise directed.
 - b. Remove or trim trees in wooded areas only as required. Minimize damage to trees left standing. Immediately remove and legally dispose of debris.
 - c. Take possession of timber and wood removed.
 - d. Trim trees evenly to achieve neat appearance with least possible damage to trees.
 - e. Apply wet burlap to prevent drying where roots are cut or damaged.
- D. Pavements, Walks, Curbs and Guard Rails
1. Remove existing pavements, walks, and curbs to limits shown on Drawings, or if not shown, to minimum extent possible to complete the work.
 2. Saw-cut pavements to be removed, including highways, driveways and walks. Remove when Work is ready to be installed.
 3. Remove slate and flag stone walks, granite and stone curbs, and guard rails to minimum extent possible. Terminate removals at joint or guard rail post. Store and protect for reuse.
- E. Walls, Fences, and Other Obstructions
1. Remove walls, fences, signs, sheds and other obstructions and store for replacement after verification with Owner and Engineer.
 2. Protect existing structures during Work.

- F. Remove and legally dispose of materials not specified to be stored or reused. Do not burn debris unless approved and required permits obtained.
- G. Replace and restore items and materials removed to original conditions.
- H. Replace items damaged during removal, storage or re-installation.

3.04 FIELD QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.

3.05 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Division 01 General Requirements.

END OF SECTION

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SECTION 31 14 13.16

SOIL STOCKPILING

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Provide labor, equipment and materials associated with soil stockpiling in accordance with this Section.
- B. Related Requirements
 - 1. Section 01 57 13 – Temporary Erosion and Sediment Control
 - 2. Section 31 00 00 – Earthwork
 - 3. Section 31 10 00 – Site Clearing
 - 4. Section 31 50 00 – Excavation Support and Protection

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Coordination, sequencing, and scheduling: per Division 01 General Requirements.

1.04 SUBMITTALS

- A. Submit in accordance with Division 01 General Requirements.
- B. Closeout and maintenance material submittals: per Division 01 General Requirements.

1.05 QUALITY ASSURANCE

- A. Provide in accordance with Division 01 General Requirements.

1.06 DELIVERY, STORAGE, AND HANDLING

- 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 MATERIALS

- A. Provide minimum 6 mil fire retardant polyethylene sheeting.

2.02 SOURCE QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.

PART 3 – EXECUTION

3.01 SOIL STOCKPILING

- A. Locate soil stockpiles in area approved by Engineer. Transport soils from generation area to stockpile areas along designated transport roadways approved by Engineer, preventing soil spillage, mud and soil tracking, and release of other materials to transport roadway throughout construction.
- B. Arrange location, clearing, removal and salvage of overburden soils, and other Site preparation for temporary stockpiles. Location: approved by Engineer.
- C. Cover soil stockpiles with minimum 6 mil polyethylene sheeting at all times, except during active loading or removal, if directed by Engineer. Keep stockpiles in neat and well drained condition.
- D. Identify stockpiles, including classification of soil or other excavated spoils. Maintain an updated inventory of all stockpiled material.

3.02 SOIL REUSE

- A. Utilize on-Site soils for backfill before use of imported soil, as directed by Engineer.
- B. Transportation and legal disposal of surplus native soils is allowed.

3.03 FIELD QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.

3.04 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Division 01 General Requirements.

3.05 PROTECTION

- A. Protect structures, utilities, facilities and pavements from damage caused by settlement, lateral movement, washout, and hazards created by stockpiling of soil.

END OF SECTION

SECTION 31 25 00

EROSION AND SEDIMENTATION CONTROLS

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Provide and install permanent devices to control erosion, siltation, and sedimentation in accordance with this Section 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. Reference Standards

1. MassDEP – Massachusetts Erosion & Sedimentation Control Guidelines for Urban and Suburban Areas
2. MassDOT
 - a. Standard Specifications and Supplements, and Construction Details
 - 1) Section 767 – Mulching, Seed for Erosion Control
 - 2) M6.04.2 Straw Mulch

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: for permanent erosion control matting.
- C. Manufacturer's Instructions
- D. 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.

1.08 SITE CONDITIONS

A. Existing conditions: per Division 01 General Requirements

PART 2 – PRODUCTS

2.01 MATERIALS

A. Permanent Erosion Control Matting

1. Provide as shown on Drawings or as directed by Engineer in compliance with the Order of Conditions to prevent slope erosion. If sequence of operations is such that only portions of slopes have been completed, preserve those portions by seeding and installation of erosion control blanket when directed, prior to completion of remaining portions of slope.
2. Provide soft pine wood wedges and stakes of biodegradable materials as recommended by manufacturer.
3. Coir log: coconut fiber mats woven into a matrix in compliance with the following.

PROPERTY	Test Method	Parameter
Weight	ASTM D3776	17.8 oz/SY (600 g/m ²)
Wide width tensile strength Wet Machine direction Cross direction	ASTM D4595	910 lbs/ft (13.3 kN/m) 870 lbs/foot (12.7 kN/m)
Wide width tensile strength Dry Machine direction Cross direction	ASTM D4595	1130 lbs/foot (16.5 kN/m) 1040 lbs/foot (15.2 kN/m)
Elongation at failure Wet Machine direction Cross direction	ASTM D4595	32 percent 26 percent
Open area	Calculated	58 percent
Thickness	ASTM D177	0.35 inch (9 mm)
Recommended shear stress		4 lbs./sq. ft. (192 N/sq.m.)
Recommended flow		10 fps (3 m/s)
Recommend slope		2:1

- B. Straw mulch: MassDOT M6.04.2, long fibered straw, 100 percent certified weed free, free from foreign matter detrimental to plant life, and in dry condition.
- C. Tackifier: biodegradable and non-toxic bonding adhesive agent during hydraulic seeding or straw mulching to minimize wind and water effects.

2.02 SOURCE QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.

PART 3 – EXECUTION

3.01 GENERAL

- A. Prevent erosion of soil and to prevent silting of drainage ditches, storm sewers, rivers, streams, and lakes.
- B. Limit duration of exposure of soils on embankments, excavations, and graded areas.
- C. Install erosion control measures in any ditch, swale or channel before runoff flows to waterways.

3.02 PREPARATION

- A. Protection
 - 1. Provide pollution prevention measures, erosion and sedimentation control, before, during and after soils are exposed. Implement and maintain erosion and sedimentation control measures as necessary until Site is permanently stabilized.
 - 2. Stabilize areas shown on Drawings with permanent erosion control practices immediately, and within 14 days after construction activity on a particular portion of Site has permanently ceased, except where construction activities will resume on the particular portion of Site within 21 days, and where snow cover precludes initiation of stabilization measures.
- B. Conform to grades and cross sections for slopes and ditches shown on Drawings.
- C. Finish to a smooth and even condition. Rake out and remove debris, roots, stones, and lumps.
- D. Loosen soil surface to permit bedding of matting.
- E. Apply seed prior to placement.
- F. Dewater trenches and swales to install materials in the dry.

3.03 INSTALLATION

- A. Install erosion control blanket and straw mulch in accordance with manufacturer's instructions, the following, and as shown on Drawings or directed by Engineer. Submit manufacturer's instructions to Engineer prior to installation. Place immediately following seeding.
- B. Install erosion control blanket onto slopes that have been graded, seeded, completed to required line and where grades are steeper than or equal to 3:1 as shown on Drawings and directed by Engineer.
- C. Place strips lengthwise in direction of flow of water.
- D. Overlap ends at least 6 inches in a shingle fashion.
- E. Turn down up-slope end of each strip of matting and bury to a depth of not less than 6 inches with soil firmly tamped against it.
- F. Engineer may require that any edge exposed to more than normal flow of water be buried in a similar manner.
- G. Build check slots at right angles to direction of flow of water. Space so one check slot or one end occurs within each 50 feet of slope length. Construct by placing a tight fold of matting at least 6 inches vertically into ground, and tamp same as up-slope ends.
- H. When directed by Engineer, spread additional seed over matting, particularly at locations disturbed by building the slots. Press matting onto ground with a light lawn roller or similar means.
- I. Use pine wedges to fasten coir to ground. Metal staples are not allowed. Pound vertically flush to surrounding surface, not protruding above finished grade. Place pine wedges in same locations as recommended by manufacturer for staples.
- J. On grades 4:1 or steeper, place pine wedges in same 3 rows, but spaced 2 feet apart.
- K. On overlapping or butting edges, double pine wedges, with spacing halved. Secure ends of matting and required check slots spaced every foot.
- L. Apply weed free straw mulch in combination with erosion control blanket on side slopes steeper than 3:1.
- M. Place mulch according to MassDOT Section 767. Do not use short fibered material or material so wet or decayed that it cannot be properly spread. Apply tackifier as needed.
- N. Maintain areas mulched or matted, until Project acceptance.

- O. Maintain swales by removing silt that reaches a depth of over 1 foot, until Project acceptance.

3.04 REPAIR/RESTORATION

- A. Repair matting immediately if any pine anchors become loosened or raised, or if any matting becomes loose, torn, or undermined.

3.05 FIELD QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.
- B. Site/Field Tests and Inspections
 - 1. Inspections of disturbed soil areas, material storage areas exposed to precipitation and erosion control measures will be conducted by both Contractor and 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 identified.
 - 2. Inspect erosion control blanket immediately after each rainfall and at least daily during prolonged rainfall or snowmelt for damage. Make appropriate repairs or replacement until acceptance by Engineer.

3.06 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Division 01 General Requirements.

END OF SECTION

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SECTION 31 50 00

EXCAVATION SUPPORT AND PROTECTION

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Provide excavation support and protection in accordance with this Section and applicable reference standards listed in Article 1.03, including shoring and bracing necessary to protect existing buildings, sidewalks and streets, utilities, all existing improvements, and excavation against movement due to caving, to meet OSHA safety requirements of shoring and bracing, and to cofferdams.
 - a. Installation of shoring and bracing
 - b. Maintenance of shoring and bracing
 - c. Removal of shoring and bracing, as required
 - 2. Shoring and bracing systems include permanent and temporary measures.
- B. Related Requirements
 - 1. Section 31 00 00 - Earthwork

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

- A. Reference Standards
 - 1. American Institute of Steel Construction (AISC)
 - a. Steel Construction Manual
 - 2. ASTM International (ASTM)
 - a. ASTM A36 Standard Specification for Carbon Structural Steel
 - b. ASTM A307 Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60000 PSI Tensile Strength
 - c. ASTM A328 Standard Specification for Steel Sheet Piling

- d. ASTM A572 Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel
 - e. ASTM A615 Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
 - f. ASTM A690 Standard Specification for High-Strength Low-Alloy Nickel, Copper, Phosphorus Steel H-Piles and Sheet Piling with Atmospheric Corrosion Resistance for Use in Marine Environments
 - g. ASTM A992 Standard Specification for Structural Steel Shapes
- 3. American Welding Society (AWS)
 - a. D1.1 - Structural Welding Code, Steel
 - 4. MassDOT
 - a. Standard Specifications and Supplements, and Construction Details

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination, sequencing, and scheduling: per Division 01 General Requirements.
- B. Pre-installation Conference
 - 1. Review geotechnical report, existing utilities and subsurface conditions.
 - 2. Review coordination for interruption, shutoff, capping, and continuation of utility services.
 - 3. Review instrumentation and monitoring program, and dewatering program. Confirm coordination with instrumentation and monitoring, and dewatering activities.
 - 4. Review proposed excavations and equipment, monitoring of excavation support and protection system and abandonment or removal of excavation support and protection system.

1.05 SUBMITTALS

- A. Submit in accordance with Division 01 General Requirements.
 - 1. Do not begin excavation requiring support until submittals are approved.

- B. Product Data
 - 1. Construction details, material descriptions, performance properties, dimensions of individual components and profiles, and calculations for excavation support and protection system for each type of product.
- C. Shop Drawings
 - 1. Plans, elevations, sections, and details for excavation support and protection system, by a professional engineer licensed in the state where the Project is located.
 - 2. Arrangement, locations, and details of soldier piles, sheet piling, lagging, tiebacks, bracing, and other components of excavation support and protection system by a professional engineer licensed in the state where the Project is located.
 - 3. Written plan for excavation support and protection, including sequence of construction of support and protection coordinated with progress of excavation
- D. Calculations and analysis data for excavation support and protection system by a professional engineer licensed in the state where the Project is located.
- E. Closeout and maintenance material submittals: per Division 01 General Requirements.
 - 1. Identify locations and depths of capped utilities, abandoned-in-place support and protection systems, and other subsurface structural, electrical, or mechanical conditions on record documents.

1.06 QUALITY ASSURANCE

- A. Provide in accordance with Division 01 General Requirements.
- B. Qualifications: per Division 01 General Requirements for installer and professional engineer.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Provide in accordance with Division 01 General Requirements.

1.08 SITE CONDITIONS

- A. Existing conditions: per Division 01 General Requirements.
- B. Review geotechnical report for applicable recommended design parameters and to determine need to perform additional test borings and conduct other exploratory operations necessary for excavation support and protection.

- C. Verify dimensions and elevations before starting Work. Survey condition of adjoining properties with Engineer. Take photographs, recording any prior settlement or cracking of structures, pavements, and other improvements. Prepare list of existing damages, verified by dated photographs, signed by Contractor, Engineer and others conducting the investigation.
- D. Survey adjacent structures and improvements, establishing exact elevations at fixed points to act as benchmarks. Identify benchmarks and record existing elevations. Locate datum level where it will not be affected by excavation operations.
- E. Interruption of Existing Utilities
 - 1. Do not interrupt any utility serving facilities without Owner's written permission. Provide temporary utility if required.
 - 2. Provide minimum 5 days advance notice of proposed interruption of utility.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Provide shoring and bracing materials, in serviceable condition and adequate for intended purpose.
- B. Steel sheet piling and shapes: continuous interlocking type; section modulus, type of section specified, in accordance with ASTM A328, ASTM A572, and ASTM A690, with continuous interlocks.
- C. Provide movable box where shoring system is required, and where sheet piling is not specified.
- D. Bracing members: wood timbers or steel members in accordance with ASTM A36.
- E. Provide bolts in accordance with ASTM A307.
- F. Provide structural steel in accordance with ASTM A36, ASTM A690, and ASTM A992.
- G. Wood lagging: lumber, mixed hardwood, pressure treated.
- H. Provide reinforcing bars in accordance with ASTM A615, Grade 60, deformed.

2.02 DESIGN CRITERIA

- A. Provide services by professional engineer licensed in the state where the Project is located, including preparation of Shop Drawings.

- B. Design excavation support system in accordance with earth pressures and other criteria indicated, for construction of permanent structures without excessive movement or settlement of adjacent buildings, roadways, structures, or utilities, as shown on Drawings and as specified. Include analysis by a professional engineer licensed in the state where the Project is located.
- C. Earth support design: coordinated dewatering design incorporating lowest anticipated excavation depths and full differential water head during dewatering.
- D. Consult official records of both surface and subsurface existing utilities and connections to verify existing conditions and limitations as they apply to this Work and its relation to other construction work. Proceed with caution in areas of utility facilities. Excavate by hand, or other methods acceptable to utility owner. Protect existing utilities to remain within and adjacent to Work area in accordance with requirements of authorities having jurisdiction.

2.03 SOURCE QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.

PART 3 – EXECUTION

3.01 GENERAL

- A. Anchor and brace system to resist earth and hydrostatic pressures, including surcharges from surface loads. Support excavation to prevent undermining or disturbance to foundations of existing structures and utilities, or of ongoing or previously completed Work. Shore, support, and protect utilities encountered.
- B. Install excavation support and protection systems to ensure minimum interference with roads, streets, walks, and adjacent occupied and used facilities.
 - 1. Do not close or obstruct streets, walks, or adjacent occupied or used facilities without approval. Provide alternate routes around closed or obstructed traffic ways if required.
 - 2. Timber components of support systems should not be utilized in locations where their removal could jeopardize the stability of the proposed culvert, retaining walls, utilities, or other facilities to remain.
- C. Maintain shoring and bracing while excavation is open.
- D. Check base stability.
- E. Prevent surface water from entering excavations.

3.02 STEEL SHEET PILING

- A. Install 1-piece sheet piling lengths and interlock vertical edges to form a continuous barrier before starting excavation.
- B. Place piling using templates and guide frame unless otherwise specified by sheet piling manufacturer. Limit vertical offset of adjacent sheet piling to 60 inches. Align exposed faces of sheet piling to vary not more than 2 inches from a horizontal line, and not more than 1:120 out of vertical alignment.
- C. Cut off sheet piling to be left in place at least 5 feet below finish grade. Indicate location of sheet piling cut off and left in place on record documents.
- D. Remove steel sheet piling following completion of Work where shown on Drawings or directed by Engineer. Obtain approval for steel sheet piling to be left in place.

3.03 BRACING

- A. Locate bracing to clear columns, floor framing construction, and permanent Work. Install new bracing before removing original brace if moved. Do not place bracing where it will be cast into permanent concrete Work unless approved by Engineer.
- B. Install internal bracing if required to prevent spreading or distortion of braced frames.
- C. Maintain bracing until structural elements are supported by other bracing, or until permanent construction is able to withstand lateral earth and hydrostatic pressures.

3.04 REPAIR/RESTORATION

- A. Remove excavation support and protection systems in stages to avoid disturbing underlying soils and rock, or damaging structures, pavements, facilities, and utilities.
- B. Steel elements of the support system may be left in place above bottom of structure footings, provided they are cut off at least 5 feet below the roadway grade. If used, all timber should be removed and replaced with approved compacted Structural Fill or Controlled Density Fill (MassDOT M.4.08.0) in confined areas when removing the earth support system.
- C. Fill voids immediately with approved backfill compacted to density specified in accordance with Section 31 00 00.
- D. Repair or replace adjacent Work damaged or displaced by removing excavation support and protection systems.

3.05 FIELD QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.
- B. Promptly correct detected bulges, breakage, or other evidence of movement to ensure that excavation support and protection system remains stable.
- C. Promptly repair damages to adjacent facilities caused by installation or faulty performance of excavation support and protection systems.

3.06 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Division 01 General Requirements.

END OF SECTION

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SECTION 32 12 16

ASPHALT PAVING

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

1. Furnish and install tack prime coat, hot mix asphalt pavement base and surface courses, temporary trench paving, permanent trench paving, pavement reclamation, structure protection and adjustments, sidewalks, driveways, hot mix asphalt berm and curb, and miscellaneous patching in accordance with this Section and applicable reference standards listed in Article 1.03.

B. Related Requirements

1. Section 32 17 23 – Pavement Markings

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Reference Standards

1. American Association of State Highway and Transportation Officials (AASHTO)
 - a. AASHTO M320 Standard Specifications for Performance-Graded Asphalt Binder
 - b. AASHTO T166 Standard Method of Test for Bulk Specific Gravity (Gmb) of Compacted Hot Mix Asphalt (HMA) Using Saturated Surface-Dry Specimens
 - c. AASHTO T209 Standard Method of Test for Theoretical Maximum Specific Gravity (Gmm) and Density of Hot Mix Asphalt (HMA)
 - d. AASHTO TP 68 Standard Method of Test for Density of In-Place Hot-Mix Asphalt (HMA) Pavement by Electronic Surface Contact Devices
2. MassDOT
 - a. Standard Specifications and Supplements, and Construction Details

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. Certificates: manufacturer's certificate verifying conformance.
- C. Mix design: for each grade of pavement used, at least 20 days prior to start of paving.
- D. Source and field quality control submittals
 - 1. Certified weigh slips for each truck load of bituminous material.
- E. Closeout and maintenance material submittals: per Division 01 General Requirements.

1.06 QUALITY ASSURANCE

- A. Provide in accordance with Division 01 General Requirements.
- B. Comply with road opening permits.
- C. Establish and control pavement (aggregate or asphalt base course and asphalt surface course) alignments, grades, elevations, and cross sections to match existing and prevent ponding.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Provide in accordance with Division 01 General Requirements.

1.08 SITE CONDITIONS

- A. Existing conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 BITUMEN FOR TACK PRIME COAT

- A. Provide in accordance with MassDOT Section 460, M3.03.0.

2.02 HOT POURED RUBBERIZED ASPHALT SEALANT

- A. Provide in accordance with MassDOT Section 460.

2.03 HOT MIX ASPHALT SURFACE COURSE STANDARD TOP

- A. Provide in accordance with MassDOT Section 460, M3.06.0.

2.04 HOT MIX ASPHALT BASE COURSE

- A. Provide in accordance with MassDOT Section 460, M3.06.0.

2.05 HOT MIX ASPHALT BERM

- A. Provide in accordance with MassDOT Section 470, M3.07.0.

2.06 HOT MIX ASPHALT FOR MISCELLANEOUS WORK

- A. Provide in accordance with MassDOT Section 472.

2.07 SOURCE QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.

PART 3 – EXECUTION

3.01 GENERAL

- A. Minimize area of pavement removed to suitable width for installation of Work. Legally dispose of existing pavements.
- B. Place hot mix asphalt between April 1 and November 15, unless otherwise specified by Owner.
- C. Do not place hot mix asphalt mixture unless breakdown and intermediate rolling can be completed by time material has cooled to 175 degrees F, and provided density of completed pavement attains at least 92.5 percent of maximum theoretical density as determined by AASHTO T209.
- D. Do not place mix on wet or damp surfaces, or when ambient temperature is 40 degrees F and falling, unless otherwise specified by Owner.

- E. When air temperature falls below 50 degrees F, take extra precaution drying aggregates, controlling temperatures of materials, placing, and compacting mixtures.
- F. Use straightedge to check compacted surfaces and obtain Engineer's approval.
- G. Utilize approved dial type thermometer and infrared pistol thermometer for each paving machine. Retain thermometer upon completion of Project.
 - 1. Fahrenheit or Celsius selectable
 - 2. Portable and battery operated
 - 3. Repeatability: plus or minus 5 degrees F.
 - 4. LCD display: to nearest 1 degree.
 - 5. Accuracy: plus or minus 2 percent.
 - 6. Emissivity: present at 0.95.
 - 7. Temperature operation range: 0 degrees F to 750 degrees F.

3.02 INSTALLATION

- A. Place hot mix asphalt base and top courses on roadways, and other areas to maintain traffic access and egress to properties abutting Work, and for safe passage of pedestrian and vehicular traffic in accordance with MassDOT Section 460 and Construction Standard Details.
 - 1. Provide minimum compacted thickness depth of hot mix asphalt base course indicated on Drawings or as directed by Engineer to achieve necessary base course grade in support of finish grade pavement elevations.
 - 2. Apply bitumen for prime and tack coat at a rate of 0.07 gallons per square yard over milled areas immediately prior to installation of top course, as shown on Drawings or directed by Engineer. Clean surface of sand and foreign matter, and dry before applying prime coat.
 - 3. Apply bitumen for prime and tack coat at a rate of 0.05 gallons per square yard over hot mix asphalt base course immediately prior to installation of top course, as shown on Drawings or directed by Engineer. Clean surface of sand and foreign matter, and dry before applying prime coat.
 - 4. Provide minimum compacted thickness depth of hot mix asphalt surface course indicated on Drawings or as directed by Engineer to achieve finish grades.

5. Apply hot poured rubberized asphalt sealant to longitudinal and transverse joints.
 6. Remove and replace defective mix not conforming to specified mix formula within stipulated tolerances on basis of testing. Samples of mixture in use will be taken as many times daily as necessary, and mixtures maintained uniform as specified. Owner may suspend further approval of plant mixtures in related Work if mixtures are not uniformly furnished as specified, until necessary changes have been made so mixtures conform to specified requirements.
 7. Irregularities which may develop before completion of rolling, and while material is still workable, may be remedied by loosening surface mixture and removing or adding material as necessary. If irregularities or surface defects remain after final compaction, defective Work will be corrected by minor surface projections, joints, and minor honeycombed surfaces ironed out smoothly to grade, and as directed.
 8. If any soft, imperfect places or spots develop on surface before final acceptance of Work, remove and replace with new materials and compact until edges of new Work seamlessly connect with old Work.
- B. Install hot poured rubberized asphalt sealer on roadway cracks less than or equal to 1-inch width. Clean and dry crack to minimum depth of twice the crack width with a high-pressure air blast prior to placing sealer. Apply sealer according to manufacturer's recommendations.
 - C. Install hot mix asphalt by handwork on roadway surfaces in locations where irregularities, inaccessibility or other unavoidable obstacles prevent mechanical spreading and finishing.
 - D. Maintain safe passage of vehicular and pedestrian traffic and access and egress.
 - E. Set manhole covers and valve boxes flush with finish grade of top course.
 - F. Do not permit vehicular traffic or loads on newly completed pavement until adequate stability has been attained and material has cooled sufficiently to prevent distortion or loss of fines. If climate or other conditions warrant, the time-period for opening to traffic may be extended, at discretion of Owner.

3.03 RECLAMATION OF ROADWAY WITH PAVING

- A. Locate and protect existing drainage and utility structures, underground pipes, culverts, conduits and other appurtenances prior to scarifying and pulverizing existing pavement. If upper sections of utilities are removed, immediately cover remaining part of structure with steel plate capable of withstanding 36.5-ton truckload with impact. Protect, remove or replace existing utility structures and boxes as part of Work.

- B. Reclamation of paving in accordance with MassDOT section 403 includes scarifying and pulverizing in-place pavement and underlying material, mixing or blending material in depths specified on Drawings, followed by placing SSC 12.5mm 75 Gyration binder course in depths specified on Drawings and SSC 19mm 75 Gyration top course in depths specified on Drawings.
- C. Remove unsuitable material in sub-grade to lines and depths established by Owner and dispose of legally. Replace with gravel borrow in accordance with MassDOT M1.03.0.
- D. Placement: within limits of Work shown on Drawings.

3.04 TEMPORARY TRENCH PAVEMENT

- A. Comply with the construction method requirements of MassDOT Section 420, MassDOT Section 460 and the Drawings.
- B. Grade gravel base to the depths required for installation of temporary trench pavement and compact gravel base prior to installing pavement.
- C. Install temporary trench pavement over gravel base to the limits and thickness shown on the Drawings. Compact temporary trench pavement in accordance with MassDOT Section 460.
- D. Unless otherwise directed by Owner, temporary trench pavement shall remain in place for one winter season. Maintain temporary pavement and repair settlement or failures until permanent pavement is installed at no additional cost to the Owner.
- E. No more than 1,000 linear feet of unpaved trenches shall be permitted at any time. The Owner reserves the right to further limit the length of unpaved trenches with no additional compensation to the Contractor.
- F. Provide temporary trench paving for each trench excavated, excluding plated areas, unless otherwise approved by Owner. Bring any trench excavated and left unpaved at the end of each workday, excluding plated areas, to uniform grade with gravel borrow or gravel base course. Provide that unpaved trench is level and smooth with surrounding pavement to minimize traffic impacts. Unpaved trenches during holidays or over weekends are not be permitted.

3.01 PERMANENT TRENCH PAVEMENT

- A. Comply with the construction method requirements of MassDOT Section 420 and MassDOT Section 460.
- B. Remove temporary trench pavement to the depths and limits shown on the Drawings. Provide neat, straight cuts and square, vertical edges. Seal seams and joints with rubberized asphalt joint sealant.

- C. Clean sand, dirt, debris and other foreign materials from surfaces before applying tack coat. Apply bituminous tack coat to clean, dry vertical edges and existing paved surfaces to bond existing and new pavement.
- D. Provide necessary protection for roadway castings to prevent damage to castings and vehicles and ensure pedestrian safety.
- E. Install hot mix asphalt base and top courses to the limits and lift depths required on the Drawings. Compact each lift in accordance with MassDOT Section 460. Match existing grades and install permanent trench pavement to maintain or improve existing drainage patterns.

3.02 HOT MIX ASPHALT BERM

- A. Replace existing hot-mix asphalt berms damaged by the Work in kind. Provide foundation for hot-mix asphalt berms in accordance with the Drawings or as directed by Engineer, conforming to requirements for type of berm.
- B. Place mixture and compact with machine approved by Owner for type of berm required.

3.03 PAVEMENT MARKINGS

- A. Provide in accordance with Section 32 17 23.

3.04 FIELD QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.

3.05 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Division 01 General Requirements.

3.06 MAINTENANCE

- A. Maintain trench width pavement during the 1 year Warranty Period. Refill areas that have settled or are unsatisfactory for traffic.

END OF SECTION

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SECTION 32 16 13

CURBS AND GUTTERS

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Provide curbs and gutters in accordance with this Section 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. References Standards
 - 1. ASTM International (ASTM)
 - a. ASTM C615 Standard Specification for Granite Dimension Stone
 - b. ASTM D1751 Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction
 - 2. MassDOT
 - a. Standard Specifications and Supplements, and Construction Details

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. Certificates: manufacturer's certification that products meet Specification requirements
- C. 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.

1.08 SITE CONDITIONS

- A. Existing conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Bituminous asphalt curb: Provide in accordance with MassDOT Section 501. Construction shall meet the Construction Standard Details for Type 3 (MassDOT Item No. 570.3)

2.02 JOINT PAD

- A. Bituminous fiber joint filler: Preformed strips of composition below, complying with ASTM D1751.

2.03 SOURCE QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.

PART 3 – EXECUTION

3.01 INSPECTION

- A. Verify that earthwork is completed to correct line and grade.
- B. Check that subgrade is smooth, compacted, and free of frost or excessive moisture.
- C. Do not commence Work until conditions are satisfactory.

3.02 INSTALLATION

- A. Comply with material requirements of the “Standard Specifications for Highways and Bridges,” The Commonwealth of Massachusetts, Department of Transportation – Highway Division (MassDOT).

3.03 BACKFILLING

- A. Provide in accordance with requirements of the “Standard Specifications for Highways and Bridges,” The Commonwealth of Massachusetts, Department of Transportation – Highway Division (MassDOT).

3.04 FIELD QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.

3.05 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Division 01 General Requirements.

END OF SECTION

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SECTION 32 17 23

PAVEMENT MARKINGS

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Provide pavement markings in accordance with this Section 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. Reference Standards
 - 1. MassDOT
 - a. Standard Specifications and Supplements, and Construction Details
 - 2. Federal Highway Administration (FHWA)
 - a. Manual on Uniform Traffic Control Devices (MUTCD)
 - b. Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FHWA Standard Specifications)

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. Product Data
 - 2. Manufacturer Instructions
 - 3. Certification that material does not exude fumes which are toxic or injurious to persons or property upon heating to application temperature
- B. 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.

1.08 SITE CONDITIONS

- A. Existing conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 THERMOPLASTIC

- A. Provide in accordance with MassDOT Section 860.
- B. Type: Latex highway paint per Mass. Highway Standard Specifications for Highways and Bridges. All painted pavement markings including centerlines, lane lines and painted medians shall meet requirements of AASHTO M248 type F.

2.02 SOURCE QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Sweep or air blast dirty pavements. Remove and dispose of dirt piles. Remove oil, grease, and similar adherent matter by washing with a suitable solvent. Wipe excess solvent from pavement and allow time for evaporation before applying pavement marking material.

3.02 INSTALLATION

- A. Minimum pavement surface temperature and the ambient temperature at time of paint application: minimum of 35.6 degrees F.
- B. Heat individual epoxy components to maximum temperature of 140 degrees F and temperatures recommended by epoxy manufacturer's written instructions for use or as stated in the FHWA Standard Specifications.
- C. Monitor the ratio of the 2 components during the application using installed metering devices. Stop application and remedy cause or problem should the ratio fall outside the range of plus or minus 5 percent of the manufacturer's specified mixing ratio for over 30 seconds or when ratio falls outside the range of plus or minus 10 percent.

- D. Reflectorize epoxy pavement markings for night visibility by adding reflective spheres by the double-drop method before paint dries or sets. Evenly disperse Type I reflective spheres followed immediately by Type II reflective spheres on a minimum wet film thickness of 20 mils on existing and new pavements at a minimum rate of 12 pounds per gallon for each type of glass sphere.
- E. Place necessary spotting at appropriate points to provide horizontal control for striping and to determine necessary starting and stopping points. Utilize longitudinal joints, pavement edges and existing markings as horizontal control when approved by Engineer.
- F. Place epoxy reflectorized pavement markings at the width, thickness, and pattern designated in the Drawings. Do not begin marking operations until applicable surface preparation work is completed and approved by the Engineer, and the T-47 atmospheric conditions and pavement surface temperature are acceptable to the Engineer.
 - 1. Adjust temperature of mixed epoxy as required for prevailing conditions, including air temperature and pavement temperature to achieve prescribed no-track time. Do not allow speed of applicator truck to exceed the recommended rate for the combination of the truck rate, pressure in the lines, and the tip opening and height of the spray gun to ensure the required thickness.
- G. Remove and replace unsatisfactory markings, resulting from the presence of dirt, oil, grease, scale, moisture, or other foreign substances, and pavement markings rejected by Engineer at no additional cost to Owner.

3.03 FIELD QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.

3.04 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Division 01 General Requirements.

END OF SECTION

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SECTION 32 31 65

STEEL GUARDRAILS

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Provide steel guardrails in accordance with this Section, the Drawings, and applicable reference standards listed in Article 1.03.
- B. Related Requirements
 - 1. Section 31 00 00 – Earthwork

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

- A. Reference Standards
 - 1. MassDOT
 - a. Standard Specifications and Supplements, and Construction Details

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: manufacturer's technical data, and installation instructions for steel guardrails.
- C. Shop Drawings showing dimensions and details of steel guardrails, including post installation.
- D. 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.

1.08 SITE CONDITIONS

- A. Existing conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 GUARDRAIL MATERIALS

- A. Provide materials in accordance with MassDOT Standard Specifications and Supplements, and Construction Details.
 - 1. Steel beam highway guard Type TL-3 M8.07.0.

2.02 SOURCE QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements. Comply with applicable reference standards listed in Article 1.03.

PART 3 – EXECUTION

3.01 STEEL POSTS

- A. Set posts plumb in hand or mechanically dug holes, or driven, and backfill with acceptable material placed in layers and thoroughly compacted.
- B. If driven, provide posts with suitable driving caps and equipment used to prevent battering or injury to posts. Remove posts damaged or distorted as a result of driving and replace with posts specified.
- C. Erect guard posts to be set in areas of proposed bituminous concrete surfacing prior to laying the surrounding finished surface.
- D. Space posts as shown on Drawings.

3.02 STEEL BEAM RAIL

- A. Erect rail to form a smooth continuous rail conforming to the required line and grade. Splice rail element by lapping in the direction of the traffic or other approved methods. Slot the holes in the rail element nearer the posts to facilitate erection and permit expansion. The rail to make full contact at each splice. The front face of the rail should align with the limits of the roadway shoulder and should not encroach on the shoulder.
- B. Draw tight bolts except where otherwise required at expansion joints. Draw up bolts through expansion joints as tightly as possible without being too tight to prevent rail elements from sliding past one another longitudinally.

3.03 FIELD QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.

3.04 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Division 01 General Requirements.

END OF SECTION

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SECTION 33 42 20

STORMWATER UTILITY DRAINAGE PIPING

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Provide storm drain systems in accordance with this Section 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. Reference Standards
 - 1. American Association of State Highway and Transportation Officials (AASHTO)
 - a. AASHTO M 170 Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
 - b. AASHTO M 330 Standard Specification for Polypropylene Pipe, 300- to 1500-mm (12- to 60-in.) Diameter
 - 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 D1622 Standard Test Method for Apparent Density of Rigid Cellular Plastics
 - e. ASTM D2412 Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading
 - f. ASTM D3212 Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals

- g. ASTM D6226 Standard Test Method for Open Cell Content of Rigid Cellular Plastics
- h. ASTM F477 Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
- 3. MassDOT
 - a. Standard Specifications and Supplements, and Construction Details

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. Product Data
 - 2. Certificates
 - a. Manufacturer's notarized certificate certifying conformance with the Specifications to accompany shipments.
 - 3. Design Data/Submittals
 - a. Pipe manufacturer's anti-floatation calculations for each pipe material and details, signed and stamped by engineer licensed in the state where Project is located based on the following criteria.
 - 1) Groundwater elevation to be set at grade above the pipe.
 - 2) Factor of safety shall be 1.1; downward forces from the weight of the pipe and soils over pipe shall be 1.1 times the buoyant uplift forces.
 - 3) The pipe to be considered empty. Calculations may not consider the weight of internal water.
 - 4. Manufacturer Instructions
 - 5. Field Quality Control Submittals
 - a. Test results
 - b. Logs of inspection and testing

- B. Closeout and maintenance material submittals: per Division 01 General Requirements.
 - 1. Record depth and take ties to the location of the following.
 - 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 General Requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Provide in accordance with Division 01 General Requirements.
- B. Packing, Shipping, Handling, and Unloading
 - 1. Provide that each shipment of pipe, pipefittings and appurtenances includes manufacturers' Certificate of Conformance.
 - 2. Inspect upon delivery and reject pipe immediately that does not conform to specified requirements or has been damaged beyond repair and immediately remove from Site.
- C. Waste Management and Disposal
 - 1. Remove damaged pipe from Site and legally dispose of.

1.08 SITE CONDITIONS

- A. Existing conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Provide in accordance with MassDOT Section 230 as specified.
- B. Provide fittings of same type and class of materials as pipe with single piece gasket, unless otherwise specified.
- C. Minimum pipe stiffness at 5 percent deflection: 46 psi for all sizes when tested in accordance with ASTM D2412.

2.02 HIGH DENSITY POLYETHYLENE (HDPE) PIPE AND FITTINGS

- A. Smooth Interior Corrugated Polyethylene Pipe shall be meet ASTM F2881.
- B. Pipe fittings shall confirm to ASTM F2881. Bell and spigot connections shall utilize inline gaskets meeting the watertight joint performance requirements of ASTM D3212.
 - 1. To assure watertightness, field performance verification may be accomplished by testing in accordance with ASTM F1417 or ASTM F2487.
- C. Join pipe using a bell & spigot joint meeting ASTM F2881 requirements. The joint to be watertight according to ASTM D3212 requirements. Gaskets to meet ASTM F477 requirements. Gaskets to be installed by pipe manufacturer and covered with a removable, protective wrap to ensure gasket is free from debris. Use a joint lubricant available from the manufacturer on the gasket and bell during assembly. 12-inch through 60 inch diameter to have an exterior bell wrap installed by the manufacturer.

2.03 REINFORCED CONCRETE PIPE (RCP)

- A. Reinforced concrete pipe must only be used at locations as shown on the Drawings.
- B. Reinforced Concrete Pipe (RCP): ASTM C76 /AASHTOM170 Class III pipe; ASTM C443/ AASHTO M198 concrete joint with confined O-ring gasket. RCP shall be sealed on the inside with cement mortar or with gunite by the grout-weld method using a pneumatic machine.
- C. Cement mortar if used shall be applied by trowel and the joint shall be thoroughly filled and finished smoothly with the inside surface of the pipe.

2.04 PERFORATED PIPE FOR UNDERDRAINS

- A. Perforated Pipe for Underdrains: AASHTO M 252M, Type S, with smooth waterway for coupling joints. Provide perforations meeting AASHTO Class II for perforated underdrain piping.
 - 1. Perforated pipe: soil-tight joints, corrugated, matching tube and fittings.

2.05 PRE-INSULATED DUCTILE IRON PIPE (DI OR DIP)

- A. Provide pre-insulated ductile iron pipe conforming to criteria specified above for ductile iron pipe.
- B. Design pre-insulated pipe to handle nominal soil and H-20 traffic loading.
- C. Insulation: foamed in place closed cell polyurethane which completely fills annular space between carrier pipe and exterior casing. Mastic seal ends of insulation.

1. Minimum Density (pounds per cubic foot): 2.1 per ASTM D1622.
 2. “K” Factor BTU/Hr. Sq. ft. degrees F/in.: 0.147 per ASTM C518.
 3. Closed Cell: 90 percent to 95 percent per ASTM D6226.
- D. Exterior casing: seamless high-density polyethylene (HDPE) ASTM D1248 with the following physical properties. Do not use tape casings.
1. Ultimate Elongation: 850 percent per ASTM D638.
 2. Tensile Yield Strength: 3,300 psi per ASTM D638.
 3. Type: Resin Type III, Grade P34 per ASTM D3350.
 4. Tangent Flexural Modules: 175,000 psi per ASTM D790.
- E. Fittings: mechanical joint and restrained with a mechanical joint retainer gland per AWWA C110 and AWWA C111.
- F. Acceptable level of quality for HDPE jacket: equivalent to Polyken tape, covered with an HDPE rock shield.

2.06 BOLTED COUPLINGS

- A. General Performance/Design Criteria
1. Provide in accordance with AWWA C219.
 2. Center sleeve: fusion bonded, epoxy coated ductile iron conforming to ANSI/NSF 61, ASTM A536.
 3. Rated working pressure: 250 psi.
 4. End rings: ductile iron meeting or exceeding ASTM A536.
 5. Gaskets: vulcanized, molded or extruded natural synthetic rubber conforming to AWWA C219.
 6. Nuts and bolts: steel ASTM A242 and AWWA C111, or 304 stainless steel.
- B. Manufacturers
1. The Ford Meter Box Company, Inc.
 2. Romac Industries, Inc.
 3. Smith-Blair, Inc.
 4. Or equal

2.07 FLEXIBLE COUPLINGS

- A. Pipe to Pipe Connection Flexible Couplings: ASTM C1173.
 - 1. Type A: non-pressure application, elastomeric sleeve or rubber sleeve incorporating stainless steel tension bands and a tightening mechanism to provide a positive seal against both infiltration and exfiltration. Stainless steel bands: 300 series stainless steel. Coupling: resilient and unaffected by soil conditions, resistant to chemicals, ultraviolet rays, and fungus growth.

2.08 UNDERGROUND MARKING TAPE

- A. Pipe to Pipe Connection Flexible Couplings: ASTM C1173.
 - 1. Type A: non-pressure application, elastomeric sleeve or rubber sleeve incorporating stainless steel tension bands and a tightening mechanism to provide a positive seal against both infiltration and exfiltration. Stainless steel bands: 300 series stainless steel. Coupling: resilient and unaffected by soil conditions, resistant to chemicals, ultraviolet rays, and fungus growth.

2.09 SOURCE QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements. Comply with applicable reference standards listed in Article 1.03.

2.10 MANHOLE CONNECTIONS

- A. New Manholes: compression type flexible connector cast into the manhole wall or flexible boot connection per pipe manufacturer recommendations.
- B. Existing Manholes: by coring and installing a boot type flexible connector.

2.11 GASKET LUBRICANT

- A. Solution of vegetable soap or other solution supplied by the pipe manufacturer.

2.12 ANTI-FLOTATION SYSTEMS

- A. Anti-floatation system for each pipe material: per the design of the pipe manufacturer and provided where required.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Make joints in dry trench according to manufacturer's recommendations and best practices for class of exterior pipe laid. Wipe ends of pipe clean with dry cloth before making joint.
- B. Lay pipe to line and grades shown on Drawings. Line and grade may be adjusted by Engineer to meet field conditions.
- C. Use solid sleeves only where approved by Engineer.
- D. Pre-Insulated Pipe
 - 1. Cover straight joints with HDPE jacket. Wrap with acceptable level of quality: equivalent to Polyken tape covered with an HDPE rock shield.
 - 2. Place pre-insulated pipe on 6-inch layer of sand, tamped to provide a stable and uniform bedding and carefully backfill and covered with 12-inches of sand, compacted in 6-inch maximum lifts.
- E. Pipe Cutting
 - 1. Cut end of pipe square to the axis of the pipe, grind any rough edges smooth, and bevel per manufacturer's recommendations where being used for push-on joints.
- F. HDPE Installation
 - 1. Bedding and burial of pipe and fittings: ASTM D2321 and the manufacturer's recommended installation guidelines.
 - 2. Minimum cover in traffic areas: 1 foot for 12- through 48-inch diameters; 2 feet for 60-inch diameter
- G. Reinforced Concrete Pipe Installation
 - 1. Inspect interior of each pipe while being joined to see that the alignment is preserved and to ensure that no dirt or debris has entered the pipe after laying and partial backfilling.
 - 2. Carefully lower pipe fittings and accessories lowered into the trench, piece by piece, by means of derrick, crane, slings and other suitable tools and equipment, in a manner such as to prevent damage to the material. Do not pass chains or slings through the inside bore of any pipe. Do not drop piping materials or dump into trench.

3.02 FIELD QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements. Comply with applicable reference standards listed in Article 1.03.
- B. Subject pipe to thorough inspection and tests according to ASTM standards. Pipes may be rejected at Site if non-conforming or damaged, regardless of prior factory acceptance.
- C. Deflection Test for Flexible Pipe
 - 1. Within 30 days of completion of the PVC and PE pipe installation, test 100 percent of pipe with a "Go/No-Go" mandrel. Size mandrel outside dimension to permit no more than a 7.5 percent deflection. Base mandrel dimensions on a base pipe ID.
$$\text{Mandrel O.D.} = ((100-7.5)/100) \times \text{base pipe ID}$$
- D. Remove and replace damaged pipe found or encase in a Class A concrete collar or envelope as directed.

3.03 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Division 01 General Requirements.

END OF SECTION

SECTION 33 42 27

ALUMINUM STRUCTURAL PLATE SINGLE RADIUS ARCH STRUCTURE AND HEADWALLS/WINGWALLS

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Provide aluminum structural plate single radius culvert crossing, aluminum sheet headwalls/wingwalls, and associated fittings/connections by Contech in accordance with this Section and applicable reference standards listed in Article 1.03
 - 2. The Owner has determined that specifying this proprietary structure for the Project is in the public's best interest as this structure's design was required to meet MassDOT review requirements. Equal manufacturers may be considered in accordance with the General Conditions.

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

- A. Reference Standards
 - 1. Refer to the drawings for applicable Reference Standards.

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. Shop Drawings
- D. Certificates
- E. Design data and submittals

- F. Sample test reports and evaluations
- G. Manufacturer instructions
- H. Source and field quality control submittals
- I. Manufacturer reports
- J. Qualification statements
- K. Closeout and maintenance material submittals: per Division 01 General Requirements.

1.06 QUALITY ASSURANCE

- A. Provide in accordance with Division 01 General Requirements.
- B. Qualifications: per Division 01 General Requirements for installer.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Provide in accordance with Division 01 General Requirements.

1.08 SITE CONDITIONS

- A. Existing conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Provide in accordance with MassDOT Standard Specifications for Highways and Bridges Subsection 230, and MassDOT Construction Notes Specified on the Drawings.
- B. Culvert design: in accordance with AASHTO HL-93 live loading and MassDOT LRFD Bridge Manual Part I and II. Design sections to accommodate AASHTO HL-93 live loading in addition to utility loads and soil loading at Site location.

2.02 ALUMINUM SHEETING, HEADWALLS, AND ASSOCIATED HARDWARE

- A. Comply with applicable reference standards listed on the drawings.
- B. Performance/Design Criteria
 - 1. Design and manufacture: standard design in accordance with the Performance/Design Criteria indicated on the drawings.

ALUMINUM STRUCTURAL PLATE SINGLE
RADIUS ARCH STRUCTURE AND
HEADWALLS/WINGWALLS

2.03 FINISHES

- A. Conform to the specifications indicated on the drawings.
- B. Provide tests and inspections in accordance with the drawings.

2.04 ACCESSORIES

- A. Conform to the specifications indicated on the drawings.
- B. Provide tests and inspections in accordance with the drawings.

2.05 SOURCE QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.
- B. Provide tests and inspections in accordance with the drawings.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Provide an examination of the subgrade and the constructed mat foundation in accordance with recommendations by the manufacturer and the geotechnical engineer.

3.02 PREPARATION

- A. Protect aluminum sheeting and headwalls in accordance with manufacturer's direction.
- B. Prepare aluminum surfacing in accordance with manufacturer's instructions.

3.03 INSTALLATION

- A. Comply with applicable direction from the manufacturer and in accordance with the drawings.

3.04 REPAIR/RESTORATION

- A. Repair and replace any damaged sheeting. Do not install or leave in place any damaged aluminum sheeting. Repair or replace any defective sheeting in accordance with manufacturer's direction.

3.05 FIELD QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements.

- B. Coordinate Site and field tests, and inspections with Engineer and manufacturer before, during, and after construction.

3.06 CLEANING

- A. Conform to the specifications indicated on the drawings.

3.07 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Division 01 General Requirements.

END OF SECTION

SECTION 33 49 00

STORMWATER STRUCTURES

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Provide storm drainage catch basins and manholes, inverts, fittings, castings, pipe connection, brickwork, damp proofing, specialties and accessories shown on Drawings, specified or required for installation and functioning of the drainage and castings in accordance with this Section and applicable reference standards listed in Article 1.03.
 - 2. Related Requirements
 - a. Section 31 00 00 – Earthwork
 - b. Section 33 42 20 – Stormwater Utility Drainage Piping

1.02 PRICE AND PAYMENT PROCEDURES

- A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

- A. Reference Standards
 - 1. American Association of State Highway and Transportation Officials (AASHTO)
 - 2. ASTM International (ASTM)
 - a. ASTM A48 Standard Specification for Gray Iron Castings
 - b. ASTM A615 Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
 - c. ASTM C139 Standard Specification for Concrete Masonry Units for Construction of Catch Basins and Manholes
 - d. ASTM C144 Standard Specification for Aggregate for Masonry Mortar
 - e. ASTM C150 Standard Specification for Portland Cement

- f. ASTM C207 Standard Specification for Hydrated Lime for Masonry Purposes
 - g. ASTM C270 Standard Specification for Mortar for Unit Masonry
 - h. ASTM C478 Standard Specification for Circular Precast Reinforced Concrete Manhole Sections
 - i. ASTM C923 Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals
 - j. ASTM C990 Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
 - k. ASTM C1244 Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test Prior to Backfill
 - l. ASTM D4101 Standard Specification for Polypropylene Injection and Extrusion Materials
3. MassDOT
- a. Standard Specifications and Supplements, and Construction Details

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
 - 1. Shop Drawings for each precast manhole, catch basin, water quality unit, and precast concrete items. Show components to be used, elevations of top of precast sections, base, intermediate levels and pipe inverts, location of pipe penetrations, cutouts and steps for each manhole. Verify finish grade elevation for each manhole location in the field.
 - 2. Product Data: manufacturers' product data and installation instructions for water quality unit, frames, covers, grates, precast items, riser bricks, grade rings, manhole sleeves, joint sealants, damp proofing, and appurtenances.
 - 3. Manufacturer Instructions

C. Design Data/Submittals

1. Manufacturer's anti-floatation calculations for each structure, signed and stamped by a licensed engineer in the state where the Project is located based on the following criteria:
 - a. Groundwater elevation shall be set at grade or base flood elevation above the structure, whichever is higher.
 - b. Factor of safety shall be 1.1; downward forces from the weight of the pipe and soils over pipe shall be 1.1 times the buoyant uplift forces.
 - c. The structure shall be considered empty. Calculations may not consider the weight of internal water

D. Qualification Statements

E. Source and Field Quality Control Submittals

1. Leakage test reports for each structure
2. Record as-built structure information neatly in a permanently bound notebook. Provide Engineer access to records. Submit copies to Engineer on a weekly basis.

F. Closeout and maintenance material submittals: per Division 01 General Requirements.

1. Location and rim elevations of precast concrete structures
2. Locations and invert elevations of pipe penetrations

1.06 QUALITY ASSURANCE

A. Provide in accordance with Division 01 General Requirements.

B. Qualifications: per Division 01 General Requirements and as follows for structure design.

1. Licensed engineer in the state where the Project is located with 5 years' minimum experience in design of similar structures.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Provide in accordance with Division 01 General Requirements.
- B. Packing, Shipping, Handling, and Unloading
 - 1. Inspect structure sections upon delivery. Structure sections that do not conform to Specification requirements will be rejected and immediately removed from the Site. Furnish labor and facilities necessary to assist the Engineer in inspecting the material.
 - 2. Handle and place concrete units in accordance with manufacturer's written rigging instructions.
 - 3. Provide necessary slings, straps, and other devices for the safe and satisfactory handling and support of manhole and catch basin sections during lifting, installing, and final positioning using lifting holes.

1.08 SITE CONDITIONS

- A. Existing conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 ANTI-FLOTATION DESIGN

- A. Provide precast structures with anti-flotation slabs and provide precast structures requiring anti-flotation slabs as 1 complete unit.
- B. Structure Criteria
 - 1. Factor of safety: minimum 1.25 against buoyancy with assumed flood elevation at top of structure. Do not include frictional resistance in calculation.
 - 2. Weight of segments: same factor of safety for buoyancy (1.25), or include stainless steel mechanical connections to connect segments together where structure is composed of successive vertical segments.
 - 3. Include positive anchorage to reinforced concrete anti-buoyancy slab of required size.

2.02 CASTINGS

- A. Cast iron: in accordance with ASTM A48 Class 30.
- B. Manufacturers
 - 1. EJ Co.
 - 2. U.S. Foundry
 - 3. Neenah
 - 4. Or equal
- C. Catch basin frames and grates: heavy duty, bicycle safe, cascading type frame and grate; nominal 24 inches square grate.
 - 1. Provide 4 flange, gray iron catch basin beehive frame with square hole grate per Drawings, meeting ASTM A48, frame meeting AASHTO M 306.
- D. Acceptable level of quality for cast iron catch basin trap: equivalent to Neenah Foundry product number R-3704 with vent holes, mounted in accordance with manufacturer specifications.

2.03 CATCH BASINS AND DRAIN MANHOLES

- A. General: Provide precast structures conforming to ASTM C478 and as shown on Drawings, capable of supporting HS-20 loading and HL-93 loading.
- B. Provide in accordance with MassDOT Section 201 and Construction Details.
- C. Catch basins and manholes to be constructed of pre-cast reinforced concrete sections unless directed otherwise by Engineer.
 - 1. Include crystalline waterproofing additive in concrete prior to casting of riser section.
 - 2. The wall sections for 4-foot diameter manholes shall be not less than five inches thick. The wall sections for 5-foot and greater diameter manholes shall be not less than six inches thick.
 - 3. Cone sections: precast sections of similar manufacture of varying heights to meet construction conditions.
 - 4. Cast openings for pipe and materials to be embedded in the walls of the structures during manufacture.

5. Lift holes: 2 maximum, cast or drilled in any section, provided with suitable rubber or concrete stopper or other approved device for plugging the holes.
 6. Clearly mark date of manufacture and name or trademark of manufacturer on inside of the riser structure.
 7. Precast Bases and Top Slabs: same construction as the precast riser sections of dimensions shown on the Drawings.
 8. Precast concrete base and first riser: monolithic.
 9. Anti-floatation slab: ASTM C139 precast monolithic base unit or cast in place based on manufacturer's recommendation and as approved.
 10. Acceptance of the sections will be on the basis of material tests and inspection of the completed product.
- D. Precast Top Slabs and Bases
1. Precast concrete bases and top slabs shall be of the same construction as the precast riser sections.
 2. Precast concrete bases and top slabs shall be of the same construction as the precast riser sections.
 3. Precast concrete base and first riser shall be monolithic.
- E. Joints between precast sections: Watertight, shiplap-type seal with and all weather performed joint sealant made of butyl rubber material in flexible rope form. It shall meet or exceed requirements of AASHTO M 198 and ASTM C990 section 6.2.1, Butyl rubber sealants.
1. Exterior joints between precast sections and lift holes shall be grouted with waterproof cement or other approved product prior to backfill or completion of the manhole if above grade
- F. Steps: manhole sections shall contain manhole steps accurately positioned and imbedded in the concrete. The steps shall be manufactured from deformed ½" steel reinforcement rod complying with ASTM A615 and encased in polypropylene complying with ASTM D4101. Include pattern design to prevent lateral slippage off step. 12-inches on center with minimum width of 16-inches and 7-inches from wall for full height of manhole.
- G. Factory applied coating: UV resistant, black bituminous damp proofing, AASHTO M 81 or M 82 cutback asphalt, or AASHTO M 140 asphalt emulsion. Coat exterior surface of precast manhole, catch basin bases and walls at 5 gallons per 100 square feet minimum per coat.

2.04 PIPE CONNECTIONS (MANHOLES AND CATCH BASINS)

- A. Compression type connector to be the sole element relied on to assure a flexible watertight seal of the pipe to the structure. The connector to consist of a single rubber gasket, be constructed solely of synthetic or natural rubber, and meet or exceed the requirements of ASTM C923.
- B. Boot type connector: watertight and consist of a rubber gasket or boot, metal expansion ring and double metal take-up clamps. Rubber boots and gasket material shall meet or exceed ASTM C923.

2.05 SOURCE QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements. Comply with applicable reference standards listed in Article 1.03

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Provide in accordance with MassDOT Sections 201 and 220 and the Drawings
- B. Placement: set catch basin and manhole frames to finished lines and grades as specified. Set castings in bituminous concrete collars and underlay with cement concrete. Collars: minimum 9 inches deep and extend to radius of 1-foot beyond circumference of frame, as shown on Drawings.
 - 1. Place so bottom of structure is plumb and pipe inverts are at proper elevations. Position tops of structures flush with finished grade.
 - 2. Locate each structure and set accurate templates to required line and grade as shown on Drawings. Remove structures incorrectly and improperly located, oriented or aligned, and rebuild.
 - 3. Establish sufficient length of proposed curb or edge of pavement adjacent to structure prior to construction of drain inlet and catch basin to ensure structure is correctly located and oriented.
 - 4. Place foundation course on firm soil of uniform bearing. If soil below foundation course is classified as unsuitable, remove and replace with crushed stone as specified in Section 31 00 00.
 - 5. Seal joints between precast sections with all-weather joint sealant as specified prior to backfill or completion of manhole, if above grade.
- C. Damp Proofing: Touch up in field prior to backfilling as required by Engineer.

- D. Adjustments to existing drainage structures: per Drawings or as directed by Engineer. Refill excavated area with gravel and set casting into concrete collar. Engineer will determine new elevation of structure.
- E. Remodeling: as specified in Drawings or as required by Engineer.
 - 1. Provide remodeling of cone of structure where line or grade requires a change greater than 6 inches at existing drainage structures or where noted on Drawings.
 - 2. Refill excavated area with gravel and set casting into concrete collar and overlay with 3-inch thick bituminous concrete top course when structures are in roadway. Engineer will determine new elevation of structure.
- F. Existing frames and grates belonging to the Town and not needed for the Work: transported and carefully stacked at the Town DPW Yard or otherwise disposed of as directed by Engineer at no additional cost to Owner.
- G. Frames and Covers
 - 1. Set to final grade 1/2-inch below pavement grade as shown on Drawings. Provide adequate temporary covers to prevent accidental entry until final placement of frame and cover.
 - 2. Use 2 rings of 1-inch diameter butyl rubber sealant between frame and chimney joints. Provide downward force to frame to compress joint, provide a watertight seal and prevent future settlement. Point compressed joint with butyl rubber caulk sealant.
 - 3. Set manhole frames and covers to final grade only after pavement base course has been applied.
- H. Seal drain pipe connections to catch basin/manhole structures with mortar in accordance with MassDOT M4.02.15.
- I. Inverts: as indicated on Drawings.
- J. Steps: Replace steps out of plumb and not to correct horizontal placement.
- K. Material: Material removed from excavation for manholes that remain after backfilling finished structure wherever possible within location. Remove and legally dispose of material if not needed or unsuitable.
- L. Backfill structures with controlled density fill as specified in Section 31 00 00 when installed with less than 18 inches of horizontal clearance from adjacent structures and pipe as directed.
- M. Do not pave over any utility appurtenances or structures unless specifically directed.

- N. Remove and replace defective castings with new castings as directed. Repair or replace damaged castings.

3.02 FIELD QUALITY CONTROL

- A. Provide in accordance with Division 01 General Requirements. Comply with applicable reference standards listed in Article 1.03.
- B. Do not pave over any of the utility appurtenances/structures unless specifically directed otherwise.
- C. If a defective casting is encountered, remove it as directed by the Engineer and install a new casting. Repair or replace castings damaged by Contractor at no additional cost to Owner.

3.03 CLEANING

- A. Use remaining material removed after excavation wherever possible. Remove and legally dispose of unused or unsuitable material at no additional cost to Owner.
- B. Clean and flush precast structures after Work is completed and before Final Acceptance.

3.04 LEAKAGE TESTING

- A. Tests to be observed by Engineer. Manholes must be complete for final test acceptance except for shelf and invert brickwork. Plug pipes and other openings in the structure walls prior to test. Test precast concrete manholes soon as they are installed, and before backfilling, to demonstrate that the work conforms to these Specifications.
- B. Vacuum Tests for Manholes
 - 1. After manhole has been constructed, and before manhole is backfilled, the Contractor shall conduct a Manhole Acceptance Test using the vacuum test procedure in ASTM C1244 except as modified.
 - a. Make pipe connections prior to testing. Plug pipes and other openings in structure walls with an approved non-shrink grout prior to test.
 - 2. Place test head at inside of top section and inflate seal in accordance with manufacturer's recommendations.

3. Draw a vacuum of 10 inches of mercury and shut off the vacuum pump. With the valves closed, the time shall be measured for the vacuum to drop to 9 inches. The manhole, regardless of diameter, shall pass if the time is greater than:
 - a. 2 min. for 0-feet to 10-feet deep manholes
 - b. 2.5 min. for 10-feet to 15-feet deep manholes
 - c. 3 min. for 15-feet to 25-feet deep manholes
 4. If the vacuum drops in excess of the prescribed rate, the Contractor shall locate the leak, make proper repairs, and retest the manhole.
 5. If the unit fails the test after repair, the unit shall be water exfiltration tested
- C. Exfiltration Test
1. Plug pipes into and out of manhole and secure plugs.
 2. Lower groundwater table (GWT) to below manhole. Maintain GWT at this level throughout test. Provide means of determining GWT level at any time throughout test.
 3. Fill manhole with water to bottom of flat slab.
 4. Allow a period of time for absorption (determined by Contractor).
 5. Refill to bottom of flat slab.
 6. Determine volume of leakage in minimum 8-hour test period and calculate rate.
 7. Acceptable leakage rate: not more than 1 gallon per vertical foot of manhole section per 24 hours.
 8. Grounds for rejection: any manhole with exfiltration rate exceeding 3 gallons per vertical foot per 24 hours.
 9. If not satisfied with the exfiltration test, the Engineer reserves the right to require an infiltration test.

3.05 REPAIRS

- A. Determine causes of leaks and repair them. Engineer shall reject any manhole with an exfiltration rate exceeding 3 gallons per vertical foot per 24-hours. If exfiltration is less than 3 gallons per vertical foot per 24-hours but more than 1 gallon per vertical foot per 24-hours, repairs may be made by approved methods as directed by the Engineer to bring the leakage within the allowable rate of one gallon per vertical foot per 24-hours. If repairs fail to reduce the leakage rate to less than one gallon per vertical foot per 24-hours after exfiltration test repairs, Engineer shall reject the manhole.
- B. Perform repairs using methods and materials approved by Engineer. Remove and replace or reconstruct if necessary. Remove and replace defective sections if required.

3.06 INSPECTION

- A. Make manhole accessible for inspection by Engineer prior to backfilling. Failure to notify the Engineer prior to backfilling may result in rejection of payment.

3.07 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Division 01 General Requirements.

END OF SECTION

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