#### **BID DOCUMENTS**

#### **FOR**

#### SALISBURY STREET CULVERT REPLACEMENT

BID NO.: 8491-J6

**CONTRACT NO.: S25-4** 

# DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION CITY OF WORCESTER, MASSACHUSETTS

PREPARED BY
WESTON & SAMPSON ENGINEERS, INC.

**JULY 2025** 



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BID PREPARED BY:	WESTON & SAMPSON ENGINEERS, IN 427 Main Street, Suite 400 Worcester, MA 01608	C.
BID REVIEWED BY:	SEAN M. DIVOLL, P.E. Assistant Commissioner of Public Works	
APPROVED BY:	JOHN K. WESTERLING Commissioner of Public Works	
BID ADMINISTERED BY:	CHRISTOPHER J. GAGLIASTRO, MCPF Purchasing Director	<del>2</del> 0

PURCHASING DIVISION
CITY OF WORCESTER
MASSACHUSETTS 01608-1895
ROOM 201 - CITY HALL, 455 MAIN ST.
PHONE (508) 799-1220

SEALED BID INVITATION (Labor, - Filed Sub-Bids NOT Required) M.G.L. Chapter 30, §39M / M.G.L. Chapter 149, s.44A (C)

<b>SEALED</b>	BID NO.	. 8491-J6
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**DATE:** July 15, 2025

CITY OF WORCESTER Christopher J. Gagliastro, MCPPO Purchasing Agent

**Buyer: Jerry Kucera** 

All bids are subject to the terms and conditions and specificity herein set forth.

COMPLETE FORM FOR GENERAL BID (ENCLOSED) MUST BE SUBMITTED IN A SEALED ENVELOPE:

DATE: August 6, 2025 TIME: 10:00 A.M. LOCAL TIME

PLACE: Purchasing Division, Room 201, City Hall, Worcester, Massachusetts

MARK SEALED ENVELOPE <u>"Sealed Bid No. 8491-J6, Salisbury Street Culvert Replacement (S25-4) / DPW"</u>

The name and address of the bidder must appear in the upper left-hand corner of the envelope. The City of Worcester is not responsible for bids not properly marked.

#### A COMPLETE BID PACKAGE SUBMISSION CONSISTS OF THE FOLLOWING:

- Form for General Bid (81 86) & Unit Price Pages
- Bid Security (5% of Total Bid)
- Forms required by City Policies & Programs

#### OTHER CONDITIONS:

- Please go to (<u>www.worcesterma.gov</u>) to review bid results.
- All questions <u>must</u> be referred in writing to Jerry Kucera via e-mail at <u>kucerajs@worcesterma.gov</u>
- <u>A pre-bid meeting has been scheduled for 9:00 AM on Thursday, July 31, 2025 @ 20 East Worcester Street (1st Floor Conference Room), Worcester, MA 01604.</u>

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#### **ARTICLE 101: INSTRUCTIONS TO BIDDERS**

#### **SECTION 1 - INTRODUCTION; DEFINITIONS**

- 1.1 In accordance with an Advertisement for Bids, the City of Worcester (the "Owner") has invited bids for the project described in the specifications contained herein.
- 1.2 These Instructions to Bidders (the "Instructions") are intended to assist bidders in the preparation of their bids, to call attention to various legal requirements and to set forth certain conditions upon which bids are submitted and received.
- 1.3 The award of the contract is governed by Chapter 30, s. 39M of the Massachusetts General Laws. Certain provisions of the foregoing statute and of other applicable statutes are summarized in these Instructions. Whenever these Instructions or any other contract documents set forth or summarize applicable statutory provisions, whether or not the statutes have been specifically referred to, such summaries are for convenience only, do not purport to be complete or correct as summaries of any particular material, and shall in no respect supersede, expand or limit rights or duties of the Owner or bidders in matters governed by the statute.
- 1.4 The following definitions shall apply in these Instructions and in the other Contract Documents:
  - The term "bidding documents" shall include the Advertisement for Bids, these Instructions, the bid forms, contract forms and other Contract Documents bound herewith, the Drawings, the Specifications, and all Addenda issued prior to receipt of bids.
  - 2) The terms "Addenda" and "Addendum" shall mean written documents and/or drawings issued by the Owner prior to execution of the contract which supplement, modify, correct, explain or interpret the bidding documents.
  - 3) All definitions set forth in the Conditions of the Contract or the other Contract Documents as therein defined are applicable to these Instructions and to the other bidding documents
  - 4) On any project for the construction, reconstruction, installation, demolition, maintenance or repair of any building, or public work, to be funded in whole or in part by city funds, or funds which, in accordance with a federal or state grant, program, or otherwise, the city expends or administers, or any such project to which the city is a signatory to the contract therefore, the provisions of this section shall apply and the same shall be referenced in every invitation to bid for such project and,

the following paragraphs shall be contained in every resulting contract there from: "It shall be a material breach of this contract if the contractor and each subcontractor shall not at all times adhere to the provisions of § 1A(e)(9) of chapter nine of the Revised Ordinances of the city by limiting their on- site, noise producing construction and related work to the hours specified by said ordinance".

5) The director of purchasing, commissioner of code enforcement and the head of any department shall have the authority to adopt any rules and regulations they deem necessary to implement this subsection with respect to contracts generally and the head of the department awarding any such contract shall have the authority to adopt any rules and regulations he or she deems necessary to implement this subsection with respect to any particular project.

#### **SECTION 2 - AVAILABILITY OF CONTRACT DOCUMENTS**

2.1 Each person requesting Contract Documents including bid forms, plans and specifications shall proceed as directed in the Advertisement for Bids.

#### SECTION 3 - EXAMINATION OF SITE AND CONTRACT DOCUMENTS; PRE-BID CONFERENCE

- 3.1 Before submitting a bid, each bidder must: (a) thoroughly examine the Contract Documents (b) visit the site to fully examine and acquaint himself with local conditions that may in any manner affect cost, progress, or performance of the Work, (c) familiarize himself with federal, state and local laws, ordinances, rules and regulations that may in any manner affect cost, progress or performance of the Work, and (d) study and carefully correlate his observations with the requirements of the Contract Documents. Failure of a bidder to visit the site and acquaint himself with the Contract Documents or to attend the pre-bid conference, if any, shall in no way relieve the bidder from any obligation with respect to his bid.
- 3.2 On request, the Owner will provide each bidder access to the site to conduct such reasonable investigations and tests as such bidder deems necessary to prepare his bid.
- 3.3 Each bidder shall promptly notify the Contracting Officer of any ambiguity, inconsistency or error he may discover upon examination of the Contract Documents, the site or other local conditions. Whenever the title "Contracting Officer" is referenced it shall be interpreted as follows: Purchasing Director, City of Worcester. The submission of a bid will constitute a representation by the bidder that he has complied with every requirement of this Section 3 and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the work of this contract.

# SECTION 4 - ADDENDA AND INTERPRETATION OF CONTRACT DOCUMENTS

- 4.1 All questions and requests for clarifications or interpretations of the meaning of the Contract Documents shall be in writing, addressed to the Purchasing Department, City of Worcester, and to be given consideration must be received at least five (5) days prior to the date fixed for opening of bids.
- 4.2 Clarifications or such interpretations and any supplemental instructions or forms, if issued, will be issued in the form of written Addenda and when possible, not later than two days before the date fixed for opening of bids. Each bidder shall be responsible for determining that he has received all Addenda issued, and failure of any bidder to receive any such Addendum shall not relieve such bidder from any obligation under its bid as submitted.
- 4.3 All Addenda so issued shall become part of the Contract Documents.
- 4.4. Oral clarifications or interpretations will be of no legal effect. The Owner will not be responsible for, and no bidder may rely upon or use as the basis of a claim against the Owner or the Owner's agent, any information, explanation or interpretation of the Contract Documents rendered in any fashion except as herein provided.

#### **SECTION 5 - WAGE RATES**

- 5.1 Minimum rates of wages for work performed under this contract will be as predetermined by the state Department of Labor and Workforce Development, in accordance with the provisions of Sections 27 of Chapter 149 of the Massachusetts General Laws.
- 5.2 Section 27B of said Chapter 149 provides record-keeping requirements for contractors and subcontractors with respect to employees, hours, wages and other matters.
- 5.3 Bidders' attention is called to Section 148 of Chapter 149 of the Massachusetts General Laws, relating to the weekly payment of wages.

#### **SECTION 6 - SALES TAX**

6.1 Section 6(f) of Chapter 54H of the Massachusetts General Laws exempts from Massachusetts sales tax, building materials and supplies to be used in the project, and bidders shall not include in their bids any amount therefor. The number of the certificate granted by the Commissioner of Revenue for use in obtaining the exemption may be obtained from the City of Worcester.

#### **SECTION 7 - PREPARATION AND SUBMISSION OF BIDS**

- 7.1 Each bid shall be submitted upon the bid forms furnished by the Owner, copies of which are bound with the bid documents. The bid forms shall be submitted, as bound, with the balance of the Contract Documents. All blank spaces shall be filled in, in ink or typewritten, in words or figures. The bid prices for each item on the bid forms shall be stated in both words and figures. Where itemized lump sum or unit prices are called for, all such prices shall be provided by the bidder. In the event of a discrepancy between prices written in words and prices written in figures, the written words shall govern. In the event of a discrepancy between the indicated sum of any column of figures and the correct sum thereof, the correct sum shall govern. The bid shall state the legal name of the bidder and shall be signed in ink by a person or persons legally authorized to bind the bidder to a contract. The name and title of the person or persons signing the bid shall be typed or printed below the signatures.
- 7.2 Each bid and the bid deposit (described below) shall be submitted to the Owner at the place stated in the Advertisement for Bids in a sealed opaque envelope bearing on the outside the name of the bidder, his address and the title of the project for which the bid is submitted. If forwarded by mail, the sealed bid and the bid deposit shall be enclosed in an envelope with the notation "BID ENCLOSED" on the face and addressed as indicated in the Advertisement for Bids.
- 7.3 Section 39L of Chapter 30 of the Massachusetts General Laws prohibits the Owner from entering into a contract for this work with, and shall not approve as a subcontractor furnishing labor and materials for a part of any such work, a foreign corporation which has not filed with the Owner, a certificate of the state secretary stating that such corporation has complied with M.G.L. c. 181, sections 3 and 5. Therefore, every Foreign Corporation must furnish a certified copy of its Certificate of Registration that has been duly filed with the state secretary's office. Any bid, general or sub, of a foreign corporation submitted without a Certificate may be rejected pursuant to Section 11.

#### **SECTION 8 - RECEIPT OF BIDS**

- 8.1 All bidders are cautioned to allow ample time for transmittal of bids. Bidders are solely responsible for delivery to and receipt by the Owner of bids at the place stated in the advertisement for Bids. Bids received after the specified time or at other than the specified location will not be accepted or recognized. The time of receipt will determine the acceptability of mailed bids, regardless of postmark.
- 8.2 Any bid may be withdrawn by the bidder or his duly authorized representative by written notice received by the Owner at the address for receipt of bids specified in the Advertisement for Bids prior to the time scheduled for the opening of such bids or authorized postponement thereof. No bid may be withdrawn for sixty (60) days, Saturdays, Sundays and legal holidays excluded, after the opening of general bids. No telephone or telegraphic bid, change in bid or withdrawal of bid

will be received or recognized. A bid may be amended or modified only by withdrawing the bid and resubmitting another bid prior to the time for the opening of bids.

8.3 Bids will be opened and read publicly at the place and time stated in the Advertisement for Bids or the authorized postponement thereof. Bidders or their authorized representatives are invited to be present.

#### **SECTION 9 - BID DEPOSIT**

- 9.1 Each bid must be accompanied by a bid deposit in the form of a bid bond, or a certified check on, or a treasurer's or cashier check issued by, a responsible bank or trust company, payable to the City of Worcester. A bid bond shall be
  - a) in form satisfactory to the Owner substantially conforming to the sample contained in the Contract Documents,
  - b) with a surety company qualified to do business (licensed) in the Commonwealth of Massachusetts and satisfactory to the Owner, and
  - c) conditioned upon the faithful performance by the principal of the agreements contained in the bid. The bid deposit shall be in the amount of 5% of the value of the bid.

#### **SECTION 10 - REJECTION OF BIDS**

- 10.1 The Owner shall reject every general bid which is not accompanied by the required bid deposit, or which otherwise does not conform to the statutory requirements or the bid documents.
- 10.2 The Owner reserves the right to reject any and all general bids which contains erasures, alterations, additions, errors or irregularities of any kind, or which contains proposed prices for any class or item of work which are, in the judgment of the Owner, substantially less or more than the actual cost to complete the work; provided, however, that the Owner reserves the right to waive any and all informalities as to form. Matters as to substance shall not be waived.

#### **SECTION 11 - AWARD OF CONTRACT**

- 11.1 The general contract will be awarded to the lowest responsible and eligible general bidder complying with the conditions and requirements provided in these Instructions, the bid forms and the other bid documents.
- 11.2 Award of the contract will be made within ninety (90) days, Saturdays, Sundays and legal holidays excluded, after (i) the opening of the bids or (ii) the

receipt by the Owner of any approvals necessary from federal or state agencies in connection with the project, whichever is later.

- 11.3 The successful bidder will be notified in writing, by mail or otherwise, that his bid has been accepted and that he has been awarded the contract. The successful bidder shall execute the contract and furnish the required bonds, at the offices of the Owner within five (5) days, Saturdays, Sundays and legal holidays excluded, after presentation of the contract to him or notice to him that the contract is ready for execution.
- 11.4 If the bidder selected as the general contractor fails to perform his agreement to execute the contract in accordance with the terms of his bid and furnish a performance bond and also a labor and materials payment bond as stated in his bid, the award will be made to the next lowest responsible and eligible general bidder.

# SECTION 12 - CERTIFICATES AND DOCUMENTS TO BE FURNISHED UPON EXECUTION OF THE CONTRACT

- 12.1 Pursuant to Sections 49A of Chapter 62C of the Massachusetts General Laws the contractor must certify that it has complied with all laws of the Commonwealth of Massachusetts relating to taxes. A form of certificate for this purpose is included in the Contract Documents.
- 12.2 Prior to commencement of work, the contractor must furnish to the Owner certificates evidencing required insurance coverage in accordance with the provisions of the insurance requirements contained in the Supplementary Conditions of the Contract.
- 12.3 The affidavit of compliance with certain laws of the Commonwealth relating to corporations, and evidence of corporate authority with respect to execution of the contract documents on behalf of the contractor, on the form contained in the bidding documents, must be furnished by the contractor to the Owner at the time of execution of the contract.
- 12.4 A performance bond and a labor and materials payment bond, each in the amount of the contract sum, must be furnished by the general contractor as stated in the bid form. Such bonds must be on the forms contained in the bid documents and must be executed and delivered to the Owner at the time of execution of the contract. Each attorney-in-fact who executes such a bond on behalf of the surety must affix thereto a certified and current copy of his power of attorney.

#### SECTION 13 - MINORITY/WOMEN BUSINESS ENTERPRISE PROGRAM

13.1 The Owner has established goals for the participation of minority and women contractors and subcontractors on all City projects. In furtherance thereof, the City of Worcester's Supplemental Equal Employment Opportunity Anti-Discrimination and Affirmative Action Program is included in the Bidding Documents, and all bidders shall comply with the requirements set forth therein.

ARTICLE 102:
GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

SECTION 1
GENERAL PROVISIONS

#### 1.1 DEFINITIONS

#### 1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents consist of the Owner-Contractor Agreement, the Conditions of the Contract (General, Supplementary and other Conditions), Performance Bond, Payment Bond, Vote of Corporation, Information to Bidders, Bid Proposal, the Drawings, the Specifications, and all Addenda issued prior to and all Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a written interpretation issued by the Contracting Officer pursuant to Subparagraph 2.2.3, or (4) a written order for a minor change in the Work issued by the Contracting Officer pursuant to Paragraph 12.3. The Contract Documents do not include Bidding Documents such as, sample forms, or portions of Addenda relating to any of these, or any other documents, unless specifically enumerated in the Owner-Contractor Agreement. The Drawings of this Contract shall be as listed on the cover sheet of the Drawings, as applicable. The Specifications of this Contract shall be listed on the Index to the Technical Specifications. In the event of any conflict among the Contract Documents, the Documents shall be construed according to the following priorities: Highest Priority - Modifications, Second Priority-Agreement, Third Priority - Addenda-later date to take precedence, Fourth Priority - Special Requirements, Fifth Priority - Special Conditions, Sixth Priority -Supplementary General Conditions, Seventh Priority - General Conditions, Eighth Priority - Specifications, Ninth Priority - Drawings.

#### 1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. This Contract represents the entire and integrated agreement between the parties hereto and supersedes all prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification as defined in Subparagraph 1.1.1. These General Conditions, wherever applicable, shall be construed consistent with, and terms of the Owner-Contractor Agreement, provided further however, that the terms of such Agreement shall take

precedence, as provided in Subparagraph 1.1.1. Except for the special agreements in Paragraph 4.18, nothing contained in the Contract Documents shall be construed to create any contractual relationship of any kind between the Architect and the Contractor. Nothing contained in the Contract Documents shall create any contractual relationship between the Owner or the Architect and any Subcontractor or Sub-subcontractor.

#### **1.1.3 THE WORK**

The Work comprises the completed construction required by the Contract Documents and includes all labor necessary to produce such construction, and all materials and equipment incorporated or to be incorporated in such construction.

#### 1.1.4 THE PROJECT

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part.

#### 1.2 EXECUTION, CORRELATION AND INTENT

- 1.2.1 The Contract Documents shall be signed in not less than duplicate by the Owner and the Contractor.
- 1.2.2 By executing the Contract, the Contractor represents that he has visited the site, familiarized himself with the local conditions under which the Work is to be performed, and correlated his observations with the requirements of the Contract Documents.
- 1.2.3 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work. The Contract Documents are complementary, and what is required by any one shall be as binding as if required by all. Work not covered in the Contract Documents will not be required unless it is consistent therewith and is reasonably inferable therefrom as being necessary to produce the intended results. Words and abbreviations which have well-known technical or trade meanings are used in the Contract Documents in accordance with such recognized meanings. All work mentioned or indicated in the Contract Documents shall be performed by the Contractor as part of this Contract unless it is specifically indicated in the Contract Documents that such work is to be done by others. Should the drawings or the Specifications disagree in themselves or with each other, the Contractor shall provide the better quality or greater quantity of work and/or materials unless otherwise directed by written addendum to the Contract.
- 1.2.4 The organization of the Specifications into divisions, sections and articles, and the arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade. The Contractor and all Subcontractors shall refer to all of the

Drawings, including those showing primarily the work of the mechanical, electrical and other specialized trades, and to all of the Sections of the Specifications, and shall perform all work reasonably inferable therefrom as being necessary to produce the indicated results.

- 1.2.5 All indications or notations which apply to one of a number of similar situations, materials or processes shall be deemed to apply to all such situations, materials or processes wherever they appear in the Work, except where a contrary result is clearly indicated by the Contract Documents.
- 1.2.6 Where codes, standards, requirements and publications of public and private bodies are referred to in the Specifications, references shall be understood to be to the latest revision prior to the date of receiving bids, except where otherwise indicated.
- 1.2.7 Where no explicit quality or standards for materials or workmanship are established for work, such work is to be of good quality for the intended use and consistent with the quality of the surrounding work and of the construction of the Project generally.
- 1.2.8 All manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with the manufacturer's written or printed directions and instructions unless otherwise indicated in the Contract Documents.
- 1.2.9 Any test boring or soil test information included with the Contract Documents or otherwise made accessible to the Contractor was obtained by the Owner or Architect for use by the Architect in the design. The Owner and Architect do not hold out such information to the Contractor as an accurate or approximate indication of subsurface conditions, and no claim for extra cost or extension of time resulting from a reliance by the Contractor on such information shall be allowed except as provided in M.G.L. c. 30, section 39N.

#### 1.3 OWNERSHIP AND USE OF DOCUMENTS

1.3.1 All Drawings and Specifications furnished by the Architect, and all copies thereof and the copyright therein, are the property of the Architect or the Owner. They are to be used only with respect to this Project and are not to be used on any other project. With the exception of one contract set for each party to the Contract, such documents are to be returned or suitably accounted for to the Architect on request at the completion of the Work. Submission or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Owner's common law copyright or other reserved rights.

# SECTION 2 ARCHITECT

#### 2.1 DEFINITION

2.1.1 The term Architect refers to either, (a) a professionally licensed architect, engineer, or landscape architect, hired or used by the City, or in the absence of thereof, (b) the Contracting Officer identified in the Instruction to Bidders. The Architect is referred to throughout the Contract Documents as if singular in number and masculine in gender.

#### 2.2 ADMINISTRATION OF THE CONTRACT

- 2.2.1 The Architect will provide administration of the Contract as herein described and pursuant to the terms of the contract between the Architect and the Owner.
- 2.2.2 The Architect will be the Owner's representative during construction and until final payment is due. The Architect will advise and consult with the Owner. The Owner's instructions to the Contractor shall be forwarded through the Architect. The Architect will have the authority to act on behalf of the Owner only to the extent provided in the Contract Documents and the Design Services Agreement between the two, unless otherwise modified by written instrument in accordance with Subparagraph 2.2.17.
- 2.2.3 The Architect will visit the site at intervals appropriate to the stage of construction to familiarize himself generally with the progress and quality of the Work and to determine in general if the Work is proceeding in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. On the basis of his on-site observations as an architect, he will keep the Owner informed of the progress of the Work, and will endeavor to guard the Owner against defects and deficiencies in the Work of the Contractor.
- 2.2.4 The Architect will not be responsible for and will not have control or charge of construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, and he will not be responsible for the Contractor's failure to carry out the Work in accordance with the Contract Documents. The Architect will not be responsible for or have control or charge over the acts or omissions of the Contractor, Subcontractors, or any of their agents or employees, or any other persons performing any of the Work.
- 2.2.5 The Architect shall at all times have access to the Work wherever it is in preparation and progress. The Contractor shall provide facilities for such access so the Architect may perform his functions under the Contract Documents.
- 2.2.6 Based on the Architect's observations and an evaluation of the Contractor's Applications for Payment, the Architect will determine the amounts owing to the Contractor and will certify Certificates for Payment in such amounts, as provided in Paragraph 9.4.

- 2.2.7 The Architect will be the interpreter of the requirements of the Contract Documents and the judge of the performance thereunder by both the Owner and Contractor.
- 2.2.8 The Architect will render interpretations necessary for the proper execution or progress of the Work, with reasonable promptness and in accordance with M.G.L. c. 30, section 39P, or any lesser time limit agreed upon. Either party to the Contract may make written request to the Architect for such interpretations.
- 2.2.9 Claims, disputes and other matters in question between the Contractor and the Owner relating to the execution of progress of the Work or the interpretation of the Contract Documents shall be referred initially to the Architect for decision, which he will render in writing within a reasonable time.
- 2.2.10 All interpretations and decisions of the Architect shall be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings. In his capacity as interpreter and judge, he will endeavor to secure faithful performance by both the Owner and the Contractor, will not show partiality to either, and will not be liable for the result of any interpretation or decision rendered in good faith, and in the absence of negligence, in such capacity.
- 2.2.11 The Architect's decisions in matters relating to artistic effect will be final if consistent with the intent of the Contract Documents.
- 2.2.12 The Architect will have authority to reject Work that does not conform to the Contract Documents. Whenever, in his opinion, he considers it necessary or advisable for the implementation of the intent of the Contract Documents, he will have authority to require special inspection or testing of the Work in accordance with Subparagraph 7.7.2, whether or not such Work be then fabricated, installed or completed. However, neither the Architect's authority to act under this Subparagraph 2.2.12 nor any decision made by him in good faith either to exercise or not to exercise such authority, shall give rise to any duty or responsibility of the Architect to the Contractor, any Subcontractor, any of their agents or employees, or any other person performing any of the Work.
- 2.2.13 The Architect will review and approve or take other appropriate action upon Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for conformance with the design concept of the Work and with the information given in the Contract Documents. Such action shall be taken with reasonable promptness so as to cause no delay. The Architect's approval of a special item shall not indicate approval of an assembly of which the item is a component.
- 2.2.14 The Architect will prepare Change Orders in accordance with Article 12, and will have authority to order minor changes in the Work as provided in Subparagraph 12.3.1.

- 2.2.15 The Architect will conduct inspections to determine the dates of Substantial Completion and final completion, will receive and forward to the Owner for the Owner's review written warranties and related documents required by the Contract and assembled by the Contractor, and will issue a final Certificate of Payment upon compliance with the requirements of Paragraph 9.9.
- 2.2.16 If the Owner and Architect agree, the Architect will provide one or more Project Representatives to assist the Architect in carrying out his responsibilities at the site. The duties, responsibilities and limitations of authority of any such Project Representative shall be as set forth in an exhibit to be incorporated in the Contract Documents.
- 2.2.17 The duties, responsibilities, and limitations of authority of the Architect as the Owner's representative during construction, as set forth in the Contract Documents and the contract between the two, will not be modified or extended without consent of the Owner and the Architect.
- 2.2.18 In case of the termination of the employment of the Architect, the Owner shall appoint an architect against whom the Contractor makes no reasonable objection whose status under the Contract Documents shall be the same as that of the former architect.

# SECTION 3 OWNER

#### 3.1 DEFINITION

3.1.1 The term Owner means the city of Worcester.

#### INFORMATION AND SERVICES REQUIRED OF THE OWNER

- 3.2.1 The Owner shall, at the time of execution of the Owner-Contractor Agreement, furnish the certification of adequate appropriation pursuant to M. G. L. Chapter 44, section 31C of the General Laws.
- 3.2.2 The Owner shall furnish existing surveys, if any, describing the physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site.
- 3.2.3 Except as provided in Subparagraph 4.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for the construction, use or occupancy of permanent structures or for permanent changes in existing facilities.
- 3.2.4 Information or services under the Owner's control shall be furnished by the Owner with reasonable promptness after receipt from the Contractor of a written request for such information or services.

- 3.2.5 Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, three (3) copies of Drawings and Specifications reasonably necessary for the execution of the Work.
- 3.2.6 The Owner shall forward all instructions to the Contractor through the Architect.
- 3.2.7 The foregoing are in addition to other duties and responsibilities of the Owner enumerated herein and especially those in respect to Work by Owner or by Separate Contractors, Payments and Completion, and Insurance in Articles 6, 9 and 11 respectively.

#### 3.3 OWNER'S RIGHT TO STOP THE WORK

3.3.1 If the Contractor fails to correct defective Work as required by Paragraph 13.2 or persistently fails to carry out the Work in accordance with the Contract Documents, the Owner, by a written order signed personally or by an agent specifically so empowered by the Owner in writing, may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of the Owner to stop the Work shall not give rise to any duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Subparagraph 6.1.3.

#### 3.4 OWNER'S RIGHT TO CARRY OUT THE WORK

3.4.1 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within seven days after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to any other remedy he may have, make good such deficiencies. In such case an appropriate Change Order shall be issued deducting from the payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the Architect's additional services made necessary by such default, neglect or failure. Such action by the Owner and the amount charged to the Contractor are both subject to prior notice being given to the Architect by the Owner. If the payments then or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

# SECTION 4 CONTRACTOR

#### 4.1 DEFINITION

4.1.1 The Contractor is the person or entity identified as such in the Owner-Contractor Agreement and is referred to throughout the Contract Documents as if

singular in number and masculine in gender. The term Contractor means the Contractor or his authorized representative.

#### 4.2 REVIEW OF CONTRACT DOCUMENTS

- 4.2.1 Before starting the Work, and at frequent intervals during the progress thereof, the Contractor shall carefully study and compare the Agreement, Conditions of the Contract, Drawings, Specifications, Addenda and other Contract Documents and shall at once report to the Architect any error, inconsistency or omission he may discover. Any necessary change shall be ordered as provided in Article 12, subject to the requirements of paragraph 1.2 and other provisions of the Contract Documents. If the Contractor proceeds with the Work without such notice to the Architect, having discovered such errors, inconsistencies or omissions, or if by reasonably study of the Contract Documents he could have discovered such, the Contractor shall bear all costs arising therefrom.
- 4.2.2 The Contractor shall give the Architect timely notice of any additional design drawings, specifications, or instructions required to define the Work in greater detail, or to permit the proper progress of the Work.
- 4.2.3 The Contractor shall not proceed with any Work not clearly and consistently defined in detail in the Contract Documents, but shall request additional drawings or instructions from the Architect as provided in subparagraph 4.2.2. If the Contractor proceeds with such Work without obtaining further drawings or instructions, he shall correct Work incorrectly done at his own expense.

#### SUPERVISION AND CONSTRUCTION PROCEDURES

- 4.3.1 The Contractor shall supervise and direct the Work, using his best skill and attention. He shall be solely responsible for all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract.
- 4.3.2 The Contractor shall be responsible to the Owner for the acts and omissions of his employees, Subcontractors and their agents and employees, and other persons performing any of the Work under a contract with the Contractor.
- 4.3.3 The Contractor shall not be relieved from his obligations to perform the Work in accordance with the Contract Documents either by the activities or duties of the Architect in his administration of the Contract, or by inspections, tests or approvals required or performed under Paragraph 7.7 by persons other than the Contractor.
- 4.3.4 Where the Contract Documents refer to particular construction means, methods, techniques, sequences or procedures or indicate or imply that such are to be used in the Work, such mention is intended only to indicate that the operations of the Contractor shall be as to produce at least the quality of work implied by the operations described, but the actual determination of whether or not

the described operations may be safely and suitably employed on the Work shall be the responsibility of the Contractor, who shall notify the Architect in writing of the actual means, methods, techniques, sequences or procedures which will be employed on the Work, if these differ from those mentioned in the Contract Documents. All loss, damage, or liability, or cost of correcting defective work arising from the employment of any construction means, methods, techniques, sequences or procedures shall be borne by the Contractor, notwithstanding that such construction means, methods, techniques, sequences or procedures are referred to, indicated or implied by the Contract Documents, unless the Contractor has given timely notice to the Architect in writing that such means, methods, techniques, sequences or procedures are not safe or suitable, and the Contractor has then been instructed in writing by the Owner to proceed at the Owner's risk.

#### 4.4 LABOR AND MATERIALS

- 4.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for all labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for the proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work. The word 'provide' shall mean furnish and install complete, including connections, unless otherwise specified.
- 4.4.2 The Contractor shall at all times enforce strict discipline and good order among his employees and shall not employ on the Work any unfit person or anyone not skilled in the task assigned to him.

#### 4.5 WARRANTY

- 4.5.1 The Contractor warrants to the Owner and the Architect that all materials and equipment furnished under this Contract will be new and of recent manufacture unless otherwise specified, and that all Work will be of good quality, free from faults and defects and in conformance with the Contract Documents. All Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective.
- 4.5.2 The Contractor shall be responsible for determining that all materials furnished for the Work meet all requirements of the Contract Documents. The Architect may require the Contractor to produce reasonable evidence that a material meets such requirements, such as certified reports of past tests by qualified testing laboratories, reports of studies by qualified experts, or other evidence which, in the opinion of the Architect, would lead to a reasonable certainty that any material used, or proposed to be used, in the Work meets the requirements of the Contract Documents. All such data shall be furnished at the Contractor's expense. This provision shall not require the Contractor to pay for periodic testing of different batches of the same material, unless such testing is specifically required by the Contract Documents to be performed at the Contractor's expense.
- 4.5.3 If the Contractor proposed to use a material which, while suitable for the intended use, deviates in any way from the detailed requirements of the Contract Documents, he shall inform the Architect in writing of the nature of such deviations at the time the material is submitted for approval, and shall request written approval of the deviation from the requirements of the Contract Documents.
- 4.5.4 In requesting approval of the deviations or substitutions, the Contractor shall provide, upon request, evidence leading to a reasonable certainty that the proposed substitution or deviation will provide a quality of result at least equal to that otherwise attainable. If, in the opinion of the Architect, the evidence presented by the Contractor does not provide a sufficient basis for such reasonable certainty, the Architect may reject such substitution or deviation without further investigation.
- 4.5.5 The Contract Documents are intended to produce a completed project of consistent character and quality of design. All components of the project have been selected to have a coordinated design in relation to the overall appearance. The Architect shall judge the design and appearance of proposed substitutes on the basis of their suitability in relation to the overall design of the project, as well as for their intrinsic merits. The Architect will not approve as equal to materials specified proposed substitutes which, in his opinion, would be out of character, obtrusive, or otherwise inconsistent with the character or quality of design of the project. In order to permit coordinated design of color and finishes the Contractor shall, if required by the Architect, furnish the substituted material in any color, finish, texture, or pattern that would have been available from the manufacturer originally specified, at no additional cost to the Owner.

- 4.5.6 Any additional cost, or any loss or damage arising from the substitution of any material or any method for those originally specified shall be borne by the Contractor, notwithstanding approval or acceptance of such substitution by the Owner or the Architect, unless such substitution was made at the written request or direction of the Owner.
- 4.5.7 The warranty provided in this paragraph 4.5 shall be in addition to and not in limitation of any other warranty required by the Contract Documents or otherwise prescribed by law.
- 4.5.8 The Contractor shall procure and deliver to the Architect, no later than the date claimed by the Contractor as the date of Substantial Completion, all special warranties required by the Contract Documents. Delivery by the Contractor shall constitute the Contractor's guarantee to the Owner that the warranty will be performed in accordance with its terms and conditions.

#### 4.6 TAXES

- 4.6.1 The Contractor shall pay all sales, consumer, use and other similar taxes for the Work or portions thereof provided by the Contractor which are legally enacted at the time bids are received, whether or not yet effective.
- 4.6.2 IMPORTANT TAX NOTE: This project, being constructed for a political subdivision of the Commonwealth of Massachusetts, is exempt from certain taxes. It is therefore required that the Contractor and all Subcontractors purchasing taxable goods covered by the governing tax codes make known to suppliers the tax-exempt status of the institution in order that such taxes will not appear in the Contract Sum. The Owner will provide the necessary evidence and certificates of its tax exemption upon request of those concerned. The most applicable taxes concerned are:
  - a. Federal Excise Taxes as applied to articles which are taxable under Chapter 12 of the Internal Revenue Code of I954, as amended.
  - b. Commonwealth of Massachusetts Sales tax.

#### 4.7 PERMITS, FEES AND NOTICES

4.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit and for all other permits and governmental fees, licenses and inspections necessary for the proper execution and completion of the Work which are customarily secured after execution of the Contract and which are legally required at the time the bids are received.

- 4.7.2 The Contractor shall give all notices and comply with all laws, ordinances, rules, regulations, and lawful orders of any public authority bearing on the performance of the Work.
- 4.7.3 It is not the responsibility of the Contractor to make certain the Contract Documents are in accordance with the applicable laws, statutes, building codes and regulations. If the Contractor observes that any of the Contract Documents are at variance therewith in any respect, he shall promptly notify the Architect in writing, and any necessary changes shall be accomplished by appropriate Modification.
- 4.7.4 If the Contractor performs any Work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the Architect, he shall assume full responsibility therefore and shall bear all costs attributable thereto.

#### 4.8 ALLOWANCES

- 4.8.1. The Contract shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by these allowances shall be supplied for such amounts and by such persons as the Owner may direct, but the Contractor will not be required to employ persons against whom he makes a reasonable objection. Note, however, that the use of such allowances are prohibited in any contract or work subject to the provisions of M.G.L. c. 149, section 44A.
- 4.8.2 Unless otherwise provided in the Contract Documents:
- .1 these allowances shall cover the cost to the Contractor, less any applicable trade discount, of the materials and equipment required by the allowance delivered at the site, and all applicable taxes;
- .2 the Contractor's costs for unloading and handling of the site, labor, installation costs, overhead, profit and other expenses contemplated for the original allowance shall be included in the Contract Sum and not in the allowance;
- .3 whenever the cost is more than or less than the allowance, the Contract Sum shall be adjusted accordingly by Change Order, the amount of which will recognize changes, if any, in handling costs on the site, labor, installation costs, overhead, profit and other expenses.

#### 4.9 SUPERINTENDENCE

- 4.9.1 The Contractor shall employ one (1) competent superintendent who shall be in attendance at the Project site full time during the progress of the Work until the date of substantial completion, and for such additional time thereafter as the Architect may determine to be necessary for the expeditious completion of the Work. The superintendent shall represent the Contractor and all communications given to the superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be so confirmed on written request in each case.
- 4.9.2 The Contractor shall retain a competent Registered Professional Engineer or Registered Land Surveyor, registered in the Commonwealth of Massachusetts, acceptable to the Architect, who shall establish, where necessary, the exterior lines and required elevations of all buildings and structures to be erected on the site and shall establish sufficient lines and grades for the construction of associated work such as, but not limited to, layout, utilities and site grading. The Engineer or Land Surveyor shall certify as to the actual location of the constructed facilities in relation to property lines, building lines, easements, and other restrictive boundaries and shall establish survey control points onsite.
- 4.9.3 The Contractor shall establish the grades, lines, levels, and necessary layout required by the various subcontractors in laying out their work.
- 4.9.4 The Contractor shall coordinate and supervise the work performed by Subcontractors to the end that the work, is carried out without conflict between trades and so that no trade, at any time, causes delay to the general progress of the Work. The Contractor and all Subcontractors shall at all times afford each trade, any separate contractor, or the Owner, every reasonable opportunity for the installation of work and the storage of materials.

#### 4.10 PROGRESS SCHEDULE

4.10.1 The Contractor shall prepare and submit to the Landscape Architect a progress schedule as described in subparagraphs 8.2.3 through 8.2.9.

#### 4.11 DOCUMENTS AND SAMPLES AT THE SITE

4.11.1 The Contractor shall maintain at the site for the Owner the record copy of all Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to record all changes made during construction, and approved Shop Drawings, Product Data and Samples. These shall be available to the Architect and shall be delivered to him for the Owner upon completion of the Work.

4.11.2 Refer to Specifications Section entitled CONTRACT CLOSEOUT, for additional requirements for Record Drawings and Maintenance and Operating Manuals.

#### 4.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

- 4.12.1 Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or any Subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.
- 4.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate a material, product or system for some portion of the Work.
- 4.12.3 Samples are physical examples that illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.
- 4.12.4 The Contractor shall review, approve and submit, with reasonable promptness and in such sequence as to cause no delay in the Work or in the work of the Owner or any separate contractor, all Shop Drawings, Product Data and Samples required by the Contract Documents.
- 4.12.5 By approving and submitting Shop Drawings, Product Data, and, Samples, the Contractor thereby represents that he has determined and verified all dimensions, quantities, field dimensions, relations to existing work, coordination with work to be installed later, coordination with information on previously accepted Shop Drawings, Product Data, or Samples and verification of compliance with all the requirements of the Contract Documents. The accuracy of all such information is the responsibility of the Contractor. In reviewing Shop Drawings, Product Data, and Samples, the Architect shall be entitled to rely upon the Contractor's representation that such information is correct and accurate.
- 4.12.6 The Contractor shall not be relieved of responsibility for any deviation from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data or Samples under Subparagraph 2.2.14 unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submission and the Architect has given written approval to the specific deviation. The Contractor shall not be relieved from responsibility for errors or omissions in the Shop Drawings, Product Data or Samples by the Architect's approval thereof.
- 4.12.7 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data or Samples, to revisions other than those requested by the Architect on previous submittals. Unless such written notice has been given, the Architect's approval of a resubmitted Shop Drawing, Product Data, or Sample shall not constitute approval of any changes not requested on the prior submittal.

- 4.12.8 No portion of the Work requiring submission of a Shop Drawing, Product Data or Sample shall be commenced until the submittal has been approved by the Architect as provided in Subparagraph 2.2.14. All such portions of the Work shall be in accordance with approved submittals.
- 4.12.9 Refer to Specifications Section entitled, SUBMITTALS, for additional requirements.

#### 4.13 USE OF SITE

4.13.1 The right of possession of the premises and the improvements made thereon by the Contractor shall remain at all times in the Owner. The Contractor's right of entry and use thereof arises solely from the permission granted by the Owner under the Contract Documents. The Contractor shall confine his apparatus, the storage of materials and the operations of his workmen to limits indicated by law, ordinances, the Contract Documents and permits and/or directions by the Architect and shall not unreasonably encumber the premises with his materials.

#### 4.14 CUTTING AND PATCHING WORK

- 4.14.1 The Contractor shall be responsible for all cutting, fitting or patching that may be required to complete the Work or to make its several parts fit together properly.
- 4.14.2 The Contractor shall not damage or endanger any portion of the Work or the work of the Owner or any separate contractors by cutting, patching or otherwise altering any work, or by excavation. The Contractor shall not cut or otherwise alter the work of the Owner or any separate contractor except with the written consent of the Owner and such separate contractor. The Contractor shall not unreasonably withhold from the Owner or any separate contractor his consent to cutting or otherwise altering the Work.

#### 4.15 CLEANING UP

4.15.1 The Contractor at all times shall keep the premises free from accumulation of waste materials or rubbish caused by his operations. At the completion of the Work he shall remove all his waste materials and rubbish form and about the Project as well as all his tools, construction equipment, machinery and surplus materials. Immediately prior to the Architect's inspection for Substantial Completion, the Contractor shall completely clean the premises. Concrete and ceramic surfaces shall be cleaned and washed. Resilient coverings shall be cleaned, waxed and buffed. Woodwork shall be dusted and cleaned. Sash, fixtures, and equipment shall be thoroughly cleaned. Stains, spots, dust, marks and smears shall be removed from all surfaces. Hardware and all metal surfaces shall be cleaned and polished. Glass and plastic surfaces shall be thoroughly

cleaned by professional window cleaners. All damaged, broken or scratched glass or plastic shall be replaced by the Contractor at this expense.

- 4.15.2 If the Contractor fails to clean up at the completion of the Work, the Owner may do so as provided in Paragraph 3.4 and the cost thereof shall be charged to the Contractor.
- 4.15.3 Refer to Specifications Section entitled, PROJECT CLOSEOUT, for additional requirements.

#### 4.16 COMMUNICATIONS

4.16.1 The Contractor shall forward all communications to the Owner through the Architect.

#### 4.17 ROYALTIES AND PATENTS

4.17.1 The Contractor shall pay all royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and shall save the Owner harmless from loss on account thereof, except that the Architect shall be responsible for all such loss when a particular design, process or the product of a particular manufacturer or manufacturers is specified, but if the Contractor has reason to believe that the design, process or product specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the Architect.

#### 4.18 INDEMNIFICATION

- 4.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Architect and its agents and employees from and against all claims, damages, losses and expenses, including but not limited to attorney's fees, arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss or expense (1) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom and (2) is caused in whole or in part by any negligent act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this Paragraph 4.18.
- 4.18.2 In any and all claims against the Architect or any of his agents or employees, by any employee of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this Paragraph 4.18 shall

not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any Subcontractor under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

4.18.3 The obligations of the Contractor under this Paragraph 4.18 shall not extend to the liability of the Architect, his agents or employees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications, or (2) the giving of or the failure to give directions or instructions by the Architect, his agents or employees provided, such giving or failure to give is the primary cause of the injury or damage.

# SECTION 5 SUBCONTRACTORS

#### 5.1 DEFINITION

- 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform any of the Work at the site and as further defined by M.G.L. c. 30, section 39F(3). The term Subcontractor is referred to throughout the Contract Documents as if singular in number and masculine in gender and means a Subcontractor or his authorized representative. The term Subcontractor does not include any separate contractor or his subcontractors.
- 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contact with a Subcontractor to perform any of the Work at the site. The term Sub-subcontractor is referred to throughout the Contract Documents as if singular in number and masculine in gender and means a Sub-subcontractor or an authorized representative thereof.

# 5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

- 5.2.1 Unless otherwise required by the Contract Documents or the Bidding Documents, the Contractor, as soon as practicable after the award of the Contract, shall furnish to the Owner and the Architect, in writing, the names of the persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each of the principal portions of the Work. The Architect will promptly reply to the Contractor in writing stating whether or not the Owner or the Architect, after due investigation, has reasonable objection to any such proposed person or entity. Failure of the Owner or Architect to reply promptly shall constitute notice of no reasonable objection.
- 5.2.2 The Contractor shall not contract with any such proposed person or entity to which the Owner or the Architect has made reasonable objection under the provisions of Subparagraph 5.2.1. The Contractor shall not be required to contract with anyone to whom he has a reasonable objection.

5.2.3 If the Owner or the Architect has reasonable objection to any such proposed person or entity, the Contractor shall submit a substitute to whom the Owner or the Architect has no reasonable objection, and the Contract Sum shall be increased or decreased by the difference in cost occasioned by such substitution and an appropriate Change Order shall be issued; however no increase in the Contract Sum shall be allowed for any such substitution unless the Contractor has acted promptly and responsively in submitting names as required by Subparagraph 5.2.1

5.2.4 The Contractor shall make no substitution for any Subcontractor, person or entity previously selected if the Owner or Architect makes reasonable objection to such substitution.

#### 5.3 SUBCONTRACTUAL RELATIONS

5.3.1 By an appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by the terms of the Contract Documents, and to assume to the Contractor all the obligations and responsibilities which the Contractor, by these Documents, assumes toward the Owner and the Architect. Said agreement shall preserve and protect the rights of the Owner and the Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that the subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the Contractor-Subcontractor agreement, the benefit of all rights, remedies and redress against the Contractor that the Contractor, by these Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with his Subsubcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the Subcontract, copies of the Contract Documents to which the Subcontractor will be bound by this Paragraph 5.3, and identify to the Subcontractor any terms and conditions of the proposed Subcontract which may be at variance with the Contract Documents. Each Subcontractor shall similarly make copies of such Documents available to his Subsubcontractors.

# SECTION 6 WORK BY OWNER OR BY SEPARATE CONTRACTORS

# 6.1 OWNER'S RIGHT TO PERFORM WORK AND TO AWARD SEPARATE CONTRACTS

- 6.1.1 The Owner reserves the right to perform work related to the Project with his own forces, and to award separate contracts in connection with other portions of the Project or other work on the site under these or similar Conditions of the Contract. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, he shall make such claim as provided elsewhere in the Contract Documents.
- 6.1.2 When separate contracts are awarded for different portions of the Project or other work on the site, the term Contractor in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.
- 6.1.3 The Owner will provide for the coordination of the work of his own forces and of each separate contractor with the Work of the Contractor, who shall cooperate therewith as provided in Paragraph 6.2.
- 6.1.4 The Contractor shall permit the Owner to place and install as much equipment during the progress of the work as is possible before the completion of the various parts of the work, and agrees that such placing and the installation of equipment shall not in any way evidence the completion of the work or any portion of it, nor shall it signify the Owner's completion of the work or any portion thereof.

#### 6.2 MUTUAL RESPONSIBILITY

- 6.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for the introduction and storage of their materials and equipment and the execution of their work, and shall connect and coordinate his Work with theirs as required by the Contract Documents.
- 6.2.2 If any part of the Contractor's Work depends for proper execution or results upon the work of the Owner or any separate contractor, the Contractor shall, prior to proceeding with the Work, promptly report to the Architect any apparent discrepancies or defects in such other work that render it unsuitable for such proper execution and results. Failure of the Contractor so to report shall constitute an acceptance of the Owner's or separate contractors' work as fit and proper to receive his Work, except as to defects which may subsequently become apparent in such work by others.
- 6.2.3 Any costs caused by defective or ill-timed work shall be borne by the party responsible therefor.

- 6.2.4 Should the Contractor wrongfully cause damage to the work or property of the Owner, or to other work on the site, the Contractor shall promptly remedy such damages as provided in Subparagraph 10.2.5.
- 6.2.5 Should the Contractor wrongfully cause damage to the work or property of any separate contractor, the Contractor shall upon due notice promptly attempt to settle with such other contractor by agreement, or otherwise to resolve the dispute. If such separate contractor sues the Owner on account of any damage alleged to have been caused by the Contractor, the Owner shall notify the Contractor.

#### 6.3 OWNER'S RIGHT TO CLEAN UP

6.3.1 If a dispute arises between the Contractor and separate contractors as to their responsibility for cleaning up as required by Paragraph 4.15, the Owner may clean up and charge the cost thereof to the contractors responsible therefor as the Architect shall determine to be just.

# SECTION 7 MISCELLANEOUS PROVISIONS

#### 7.1 GOVERNING LAW

7.1.1 The Contract shall be governed by the law of the Commonwealth of Massachusetts.

#### 7.2 SUCCESSORS AND ASSIGNS

- 7.2.1 The Owner and the Contractor each binds himself, his partners, successors, assigns and legal representatives to the other party hereto and to the partners, successors, assigns and legal representatives of such other party with respect to all covenants, agreements, and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract or sublet it as a whole without the written consent of the other, nor shall the Contractor assign any moneys due or to become due to him hereunder, without the previous written consent of the Owner.
- 7.2.2 If, after making final payment, the Owner conveys to a third party any building or other improvement constructed under the Contract, any rights with respect to the property so conveyed which the Owner may have against the Contractor under Article 13 or by virtue of claims which, under the terms of subparagraph 9.9.4, are reserved to the Owner after the making and acceptance of final payment, shall automatically transfer to such third party.

#### 7.3 WRITTEN NOTICE

7.3.1 Written notice shall be deemed to have been duly served if delivered in person to an authorized representative of the person or entity for whom it was

intended, or if delivered at or sent by registered or certified mail or by telegraph to the address of such person or entity set forth in the Agreement or in a subsequent written notice.

#### 7.4 CONSENT OR WAIVER

7.4.1 No consent or waiver, express or implied, by the Owner or the Architect to, or of, any breach of any covenant, condition or duty of the Contractor shall be construed as a consent to or waiver of any other breach of the same or any other covenant, condition or duty.

#### 7.5 PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND

7.5.1 The Owner shall have the right to require the Contractor to furnish bonds covering the faithful performance of the Contract and the payment of all obligations arising thereunder if and as required in the Bidding Documents or in the Contract Documents.

#### 7.6 RIGHTS AND REMEDIES

7.6.1 The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law.

#### **7.7 TESTS**

- 7.7.1 If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any portion of the Work to be inspected, tested or approved, the Contractor shall give the Architect timely notice of its readiness so the Architect may observe such inspection, testing or approval. The Contractor shall bear all costs of such inspections, tests or approvals conducted by public authorities. Unless otherwise provided, the Owner shall bear all costs of other inspections, tests or approvals.
- 7.7.2 If the Architect determines that any Work requires special inspection, testing, or approval which Subparagraph 7.7.1 does not include, he will, upon written authorization from the Owner, instruct the Contractor to order such special inspection, testing or approval, and the Contractor shall give notice as provided in Subparagraph 7.7.1. If such special inspection or testing reveals a failure of the Work to comply with the requirements of the Contract Documents, the Contractor shall bear all costs thereof, including compensation for the Architect's additional services made necessary by such failure, otherwise the Owner shall bear such costs, and an appropriate Change Order shall be issued.
- 7.7.3 The Contractor shall obtain and deliver promptly to the Architect any occupancy permit or any certificates of final inspection of any part of his work or

operating permits for any mechanical apparatus, such as elevators, escalators, boilers, air compressors, etc., which may be required by law to permit full use and occupancy of the premises by the Owner. Receipt of such permits or certificates by the Architect shall be a condition precedent to Substantial Completion of the Work.

#### SECTION 8 TIME

#### 8.1 DEFINITIONS

- 8.1.1 Unless otherwise provided, the Contract Time is the period of time allotted in the Contract Documents for Substantial Completion of the Work as defined in Subparagraph 8.1.3, including authorized adjustments thereto.
- 8.1.2 The date of commencement of the Work is the date established in a notice to proceed. If there is no notice to proceed, it shall be the date of the Owner-Contractor Agreement or such other date as may be established therein.
- 8.1.3 The Date of Substantial Completion of the Work or designated portion thereof is the Date certified by the Architect when construction is sufficiently complete, in accordance with the Contract Documents, so the Owner can occupy or utilize the Work or designated portion thereof for the use for which it is intended and only minor items which can be corrected or completed without substantial interference with the Owner's use of the Work remain to be corrected or completed.
- 8.1.4 The term day as used in the Contract Documents shall mean calendar day unless otherwise specifically designated.
- 8.1.5 The term "working day" shall mean any calendar day except Saturdays, Sundays, and legal holidays at the place of the project.

#### 8.2 PROGRESS AND COMPLETION

- 8.2.1 All time limits stated in the Contract Documents are of the essence of the Contract.
- 8.2.2 The Contractor shall begin the Work on the date of commencement as defined in Subparagraph 8.1.2. He shall carry the Work forward expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.
- 8.2.3 Within two weeks after award of the Contract, the Contractor shall submit to the Architect a Progress Schedule showing for each class of work included in the Schedule of Values, the percentage completion to be obtained and the total dollar value of work to be completed as of the first of each month until Substantial

Completion. All calculations shall be on the basis of work in place, but not including the value of materials delivered but not in place.

- 8.2.4 The Progress Schedule shall be based on an orderly progression of the Work, allowing adequate time for each operation, and leading to a reasonable certainty of Substantial Completion by the date established in the Agreement. The Progress Schedule will be reviewed by the Architect for compliance with the requirements of this article and will be accepted by him or returned to the Contractor for revision and re-submittal. Unless specifically required by law, no payment under this Contract shall be due until the Progress Schedule has been approved by the Architect.
- 8.2.5 If in any Application for Payment the total value of the completed Work in place, as certified by the Architect, is less than 90% of the total value of the Work in place estimated in the Progress Schedule, the Owner may, at his option, require the Contractor to accelerate the progress of the work without cost to the Owner by increasing the work force or hours of work, or by other reasonable means approved by the Architect.
- 8.2.6 If each of three successive applications, as certified by the Architect, indicate that the actual work completed is less than 90% of the values estimated in the Progress Schedule to be completed by the respective dates, the Owner may at his option, treat the Contractor's delinquency as a default justifying the Owner to initiate a termination of the Contract.
- 8.2.7 If the Architect has determined that the Contractor should be permitted to extend the time for completion, as provided in paragraph 8.3, the calendar dates in the Progress Schedule shall be adjusted accordingly to retain their same relationship to the adjusted date of Substantial Completion, and the dollar value of work to be completed as of the first of each month shall be adjusted pro-rata.
- 8.2.8 If the Contractor fails to submit any Application for Payment in any month, the Architect shall, for the purpose of this evaluation of progress, certify separately to the actual value of the work in place and completed as of the first of the month, to the best of his knowledge.
- 8.2.9 Nothing herein shall limit the Owner's right to liquidated or other damages for delays by the Contractor or to any other remedy which he may possess under other provisions of the Contract Documents or by law.

# 8.3 DELAYS AND EXTENSIONS OF TIME

- 8.3.1 Any delay and subsequent request for an extension of time shall be governed by M.G.L. c. 30, section 39(O) and the Owner-Contractor Agreement.
- 8.3.2 No work shall be suspended without the written permission of the Owner or his representative.
- 8.3.3 If no agreement is made stating the dates upon which interpretations as provided in Subparagraph 2.2.8 shall be furnished, then no claim for delay shall be allowed on account of failure to furnish such interpretations until thirty days after written request is made for them, and not then unless such claim is reasonable.
- 8.3.4 This Paragraph 8.3 does not exclude the recovery of damages for delay by either party under other provisions of the Contract Documents.

# SECTION 9 PAYMENTS AND COMPLETION

9.1.1 The Contract Sum is stated in the Owner-Contractor Agreement and, including authorized adjustments thereto, is the total amount payable by the Owner to the Contractor for the performance of the Work under the Contract Documents.

# 9.2 SCHEDULE OF VALUES

9.2.1 Before the first Application for Payment, the Contractor shall submit to the Architect a schedule of values allocated to the various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Architect may require and shall be revised if later found by the Architect to be inaccurate. This schedule, unless objected to by the Architect, shall be used only as a basis for the Contractor's Applications for Payment.

# 9.3 APPLICATIONS FOR PAYMENT

- 9.3.1 At least ten days before the date for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment notarized if required, supported by such data substantiating the Contractor's right to payment as the Owner or the Architect may require, and reflecting retainage, if any, as provided in Supplemental General Conditions-Part I, Article I, Paragraph 1.8 or 1.9; whichever is applicable. The format and number of copies of such Applications for Payment shall be as directed by the Architect.
- 9.3.2 Unless otherwise provided in the Contract Documents, payments will be made on account of materials or equipment not incorporated in the Work but delivered and suitably stored at the site and, if approved in advance by the Owner,

payments may similarly be made for materials or equipment suitably stored at some other location agreed upon in writing. Payments for materials or equipment stored on or off the site shall be conditioned upon submission by the Contractor of bills of sale or such other procedures satisfactory to the Owner to establish the Owner's title to such materials or equipment or otherwise protect the Owner's interest, including applicable insurance and transportation to the site for those materials and equipment stored off the site. The Contractor shall reimburse the Owner for any loss or damage to such unincorporated materials or equipment not covered by insurance.

- 9.3.3 The Contractor warrants that title to all Work, materials and equipment covered by an Application for Payment will pass to the Owner either by incorporation in the construction or upon the receipt of payment by the Contractor, whichever occurs first, free and clear of all liens, claims, security interests or encumbrances, hereinafter referred to in this Article 9 as "liens". The Contractor further agrees that the submission of any Application for Payment shall conclusively be deemed to waive all liens with respect to said work, materials and labor to which the Contractor then may be entitled; provided, however, that in no event shall such waiver of lien rights waive right to payment for said Work, materials and labor.
- 9.3.4 Each Application for Payment or periodic estimate requesting payment must be accompanied by a certificate from each subcontractor stating that he has been paid all amounts due him on the basis of the previous periodic payment to the Contractor, or else stating the amount not so paid and the reason for the discrepancy. In the event of any such discrepancy, the Contractor shall be required to furnish his own written explanation.

# 9.4 CERTIFICATES FOR PAYMENT

- 9.4.1 The Architect will, within seven days after the receipt of the Contractor's Application for Payment, either certify a Certificate for Payment to the Owner, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor in writing his reasons for withholding certification of a Certificate as provided in Subparagraph 9.6.1.
- 9.4.2 The certification of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on his observations at the site as provided in Subparagraph 2.2.3 and the data comprising the Application for Payment, that the Work has progressed to the point indicated; that, to the best of his knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents (subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to the results of any subsequent tests required by or performed under the Contract Documents, to minor deviations from the Contract Documents correctable prior to completion, and to any specific qualifications stated in his Certificate); and that the Contractor is entitled to payment in the amount certified. However, by certifying a Certificate

for Payment, the Architect shall not thereby be deemed to represent that he has made exhaustive or continuous on-site inspections to check the quality or quantity of the Work or that he has reviewed the construction means, methods, techniques, sequences or procedures, or that he has made any examination to ascertain how or for what purpose the Contractor has used the moneys previously paid on account of the Contract.

### 9.5 PROGRESS PAYMENTS

- 9.5.1 After the Architect has certified a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents.
- 9.5.2 The Contractor shall promptly pay each Subcontractor upon receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor's Work, the amount to which said Subcontractor is entitled, reflecting the percentage actually retained, if any, from payments to the Contractor on account of such Subcontractor's Work. The Contractor shall, by an appropriate agreement with each Subcontractor, require each Subcontractor to make payments to his Sub-subcontractors in similar manner.
- 9.5.3 The Architect may, on request and at his discretion, furnish to any Subcontractor, if practicable, information regarding the percentages of completion or the amounts applied for by the Contractor and the action taken thereon by the Architect on account of Work done by such Subcontractor.
- 9.5.4 Neither the Owner nor the Architect shall have any obligation to pay or to see the payment of any moneys to any Subcontractor except as may otherwise be required by law.
- 9.5.5 No Certificate for a progress payment, nor any progress payment, nor any partial or entire use or occupancy of the Project by the Owner, shall constitute an acceptance of any Work not in accordance with the Contract Documents.

# 9.6 PAYMENTS WITHHELD

9.6.1 The Architect may decline to certify payment, in whole or in part, to the extent reasonably necessary to protect the Owner, if in his/her opinion he/she is unable to make representations to the Owner as provided in Subparagraph 9.4.2. If the Architect is unable to make representations to the Owner as provided in Subparagraph 9.4.2 and to certify payment in the amount of the Application, he/she will notify the Contractor as provided in Subparagraph 9.4.1. If the Contractor and the Architect cannot agree on a revised amount, the Architect will promptly certify a Certificate for Payment for the amount for which he/she is able to make such representations to the Owner. The Architect may also decline to certify payment or because of subsequently discovered evidence or subsequent observations, he may nullify the whole or any part of any Certificate for Payment

previously certified, to such extent as may be necessary in his/her opinion to protect the Owner from loss because of:

- defective Work not remedied
- 2. third party claims filed or reasonable evidence indicating probable filing of such claims,
- 3. failure of the Contractor to make payments properly to subcontractors or for labor, materials or equipment
- 4. reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum.
- 5. damage to the Owner,
- 6. reasonable evidence that the Work will not be completed within the Contract Time or
- 7. persistent failure to carry out the Work in accordance with the Contract Documents
- 8. failure of mechanical trades or electrical trades subcontractors to comply with mandatory requirements for maintaining record drawings. The Contractor shall be required to check record drawings each month. Written conformation that the record drawings are "up-to-date" shall be required by the Architect before approval of the Contractor's monthly payment requisition will be considered.
- 9.6.2 When the above grounds in Subparagraph 9.6.1 are removed, payment shall be made for amounts withheld because of them.

#### 9.7 FAILURE OF PAYMENT

9.7.1 If the Architect does not certify a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor as required by the Contract Documents any amount certified by the Architect, then the Contractor may, upon seven additional days written notice to the Owner and the Architect, stop the Work until payment of the amount owing has been received.

# 9.8 SUBSTANTIAL COMPLETION

9.8.1 When the Contractor considers that the Work, or a portion thereof designated in the Contract Documents for separate completion, is substantially complete as defined in subparagraph 8.1.3, the Contractor shall submit to the Architect (1) a list of items to be completed or corrected, and (2) all special

warranties required by the Contract Documents endorsed by the Contractor and in a form reasonably acceptable to the Architect. The failure to include any items on the list mentioned in the preceding sentence does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. When the Architect on the basis of an inspection determines that the Work or designed portion thereof is substantially complete, and when the Contractor has submitted to the Architect the special warranties, as provided in the first sentence of this subparagraph, the Architect will then certify a Certificate of Substantial Completion which shall establish the Date of Substantial Completion, shall state the responsibilities of the Owner and the Contractor for security, maintenance, heat, utilities, damage to the Work, and insurance, and shall fix the time within which the Contractor shall complete the items listed therein. Warranties required by the Contract Documents shall commence on the Date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Owner and the Contractor for their written acceptance of the responsibilities assigned to them in such Certificate.

9.8.2 Upon Substantial Completion of the Work or designated portion thereof and upon application by the Contractor and certification by the Architect, the Owner shall make payment, reflecting adjustment in retainage, if any, for such Work or portion thereof, as provided in the Contract Documents.

#### 9.9 FINAL COMPLETION AND FINAL PAYMENT

9.9.1 Upon receipt of written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection and, when he finds the Work acceptable under the Contract Documents and the Contract fully performed, he will promptly certify a final Certificate of Payment stating that to the best of his knowledge, information and belief, and on the basis of his observations and inspections, the Work has been completed in accordance with the terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor, and noted in said final Certificate, is due and payable. The Architect's certification of the final Certificate for Payment will constitute a further representation that the conditions precedent to the Contractor's being entitled to final payment as set forth in Subparagraph 9.9.2 have been fulfilled.

9.9.2 Unless otherwise required by applicable law, neither the final payment nor the remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that all payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or his property might in any way be responsible, have been paid or otherwise satisfied, (2) consent of surety, if any, to final payment and (3), if required by the Owner, other data establishing payment or satisfaction of all such obligations, such as receipts, releases and waivers of liens, arising out of the Contract, to the extent and in such form as may be designated by the Owner. If the Contractor fails to

furnish such releases or waivers as the Owner reasonably requires to satisfy the Owner that there are not outstanding claims, the Owner may require the Contractor, as a condition of final payment, to furnish a bond satisfactory to the Owner to indemnify the Owner against any such claims.

- 9.9.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by the issuance of Change Orders affecting final completion, and the Architect so confirms, the Owners shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than the retainage stipulated in the Contract Documents, and if bonds have been furnished as provided in Paragraph 7.5., 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 the Contractor to the Architect prior to certification of 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.
- 9.9.4 The making of final payment shall constitute a waiver of all claims by the Owner except those arising from: (1) unsettled claims under the Bonds required elsewhere in the Contract Documents, (2) faulty or defective Work appearing after Substantial Completion, (3) failure of the Work to comply with the requirements of the Contract Documents, or (4) terms of any special warranties required by the Contract Documents.
- 9.9.5 The acceptance of final payment shall constitute a waiver of all claims by the Contractor except those previously made in writing and identified by the Contractor as unsettled at the time of the final Application for Payment.

# SECTION 10 PROTECTION OF PERSONS AND PROPERTY

# 10.1 SAFETY PRECAUTIONS AND PROGRAMS

10.1.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work.

## 10.2 SAFETY OF PERSONS AND PROPERTY

10.2.1 The Contractor shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury or loss to: (1) all employees on the Work and all other persons who may be affected thereby; (2) all the Work and all materials and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the Contractor or any of his Subcontractors or Sub-subcontractors; and (3) other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements,

roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

- 10.2.2 The Contractor shall give all notices and comply with all applicable laws, ordinances, rules, regulations and lawful orders of any public authority bearing on the safety of persons or property or their protection from damage, injury or loss.
- 10.2.3 The Contractor shall erect and maintain, as required by existing conditions and progress of the Work, all reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent utilities.
- 10.2.4 When the use or storage of explosives or other hazardous materials or equipment is necessary for the execution of the Work, the Contractor shall exercise the utmost care and shall carry on such activities under the supervision of properly qualified personnel.
- 10.2.5 The Contractor shall promptly remedy all damage or loss (other than damage or loss insured under Paragraph 11.3) to any property referred to in Clause 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, any Subcontractor, any Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone whose acts any of them may be liable and for which the Contractor is responsible under Clauses 10.2.1.2 and 10.2.1.3, except damage or loss attributable to the acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either by of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to his obligations under Paragraph 4.18.
- 10.2.6 The Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designed by the Contractor in writing to the Owner and the Architect.
- 10.2.7 The Contractor shall not load or permit any part of the Work to be loaded so as to endanger its safety.

# **10.3 EMERGENCIES**

10.3.1 In any emergency affecting the safety of persons or property, the Contractor shall act, at his discretion, to prevent threatened damage, injury or loss. Any additional compensation or extension of time claimed by the Contractor on account of emergency work shall be determined as provided in Article 12 for the Changes in the Work.

# SECTION 11 INSURANCE

## 11.1 CONTRACTOR'S LIABILITY INSURANCE

- 11.1.1 The Contractor shall purchase and maintain in a company or companies to which the Owner has no reasonable objection, such insurance as will protect him from claims set forth below which may arise out of or result from the Contractor's operations under the Contract whether such operations be by himself or by any Subcontractor or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:
  - 1) claims under workers' or workmen's compensation, disability benefit and other similar employee benefit acts;
  - 2) claims for damages because of bodily injury, occupations sickness or disease, or death of his or her employees
  - 3) claims for damages because of bodily injury, sickness or disease, or death of any person other than his or her employees
  - claims for damages insured by usual personal injury liability coverage which are sustained (1) by any person as a result of an offense directly or indirectly related to the employment of such person by the contractor or, 92) by any other person;
  - claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, 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
- 11.1.2 The insurance required by subparagraph 11.1.1 shall include all major divisions of coverage, and shall be on a comprehensive general basis including Premises and Operations (including X-C-U), Owner's and Contractor's Protective Products and Completed Operations, and Owned, Non-owned, and Hired Motor Vehicles. Such insurance shall be written for not less than any limits of liability required by law or those set forth below, whichever is greater.
- 1. Workmen's Compensation -Statutory/Employers Liability \$500,000.

- 2. Commercial General Liability Per Occurrence / Aggregate \$1,000.000 / 2,000,000
- 3. Automobile Liability Combined Single Limit
- 4. Bodily Injury & Property Damage combined single limit of \$ 1,000,000 (all owned, hired and non-owned autos).
- 5. Excess / Umbrella Liability Per Occurrence / Aggregate \$ 1,000,000 / \$ 1,000,000
- 6. Independent Contractors -Same limits as above
- 7. Products and Completed Operations -Same limits as above commencing with issuance of final Certificate of Payment.
- 8. Contractual Liability Same limits as above.
- 11.1.3 The insurance required by Subparagraph 11.1.1 shall include contractual liability insurance applicable to the Contractor's obligations under Paragraph 4.18.
- 11.1.4 Certificates of Insurance acceptable to the Owner shall be filed with the Owner. These Certificates shall contain a provision that coverages afforded under the policies will not be canceled until at least thirty days prior written notice has been given to the Owner.
- 11.1.4.1 These certificates shall set forth evidence of all coverage required by 11.1.1, 11.1.2 and 11.1.3. The Contractor shall furnish to the Owner copies of any endorsements that are subsequently issued amending limits of coverage.

#### 11.2 OWNER'S LIABILITY INSURANCE

11.2.1 The Owner shall be responsible for maintaining his own liability insurance and, at his option, may purchase and maintain such insurance as will protect him against claims which may arise from operations under the Contract.

# 11.3 PROPERTY INSURANCE

- 11.3.1 The Contractor shall purchase and maintain property insurance upon the entire Work at the site to the full insurable value thereof. This insurance shall include the interests of the Owner, the Contractor, Subcontractors and Subsubcontractors in the Work and shall insure against the perils of fire and extended coverage and shall include "all risk" insurance for physical loss or damage including, without duplication of coverage, theft, vandalism and malicious mischief.
- 11.3.2 The Owner shall purchase and maintain such boiler and machinery insurance as may be required by the Contract Documents or by law. This

insurance shall include the interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Work.

- 11.3.3 Any loss insured under Subparagraph 11.3.1 is to be adjusted with the Contractor and made payable to the Contractor as trustee for the insureds, as their interests may appear, subject to the requirements of any applicable mortgagee clause and of Subparagraph 11.3.8.
- 11.3.4. The Contractor shall pay each Subcontractor a just share of any insurance moneys received by the Contractor, and by appropriate agreement, written where legally required for validity, shall require each Subcontractor to make payments to his Sub-subcontractors in similar manner.
- 11.3.5 The Contractor shall file a copy of all policies with the Owner before an exposure to loss may occur.
- 11.3.6 The Owner and Contractor waive all rights against (1) each other and the Subcontractors, Sub-subcontractors, agents and employees each of the other, and (2) the Architect and separate contractors, if any, and their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other perils to the extent covered by insurance obtained pursuant to this Paragraph 11.3 or any other property insurance applicable to the Work, except such rights as they may have to the proceeds of such insurance held by the Contractor as trustee. The foregoing waiver afforded the Architect, his agents and employees shall not extend to the liability imposed by Subparagraph 4.18.3. The Owner or the Contractor, as appropriate, shall require of the Architect, separate contractors, Subcontractors, and Sub-subcontractors by appropriate agreements, written where legally required for validity, similar waivers each in favor of all other parties enumerated in this Subparagraph 11.3.6.
- 11.3.7 If required in writing by any party in interest, the Contractor as trustee shall, upon the occurrence of an insured loss, give bond for the proper performance of his duties. He shall deposit in a separate account any money so received, and he shall distribute it in accordance with such agreement as the parties in interest may reach or in accordance with the direction of a court of competent jurisdiction.
- 11.3.8 The Contractor as trustee shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within five days after the occurrence of loss to the Contractor's exercise of this power. If such objection be made, the Contractor as trustee shall make settlement with the insurers in accordance with the direction of a court of competent jurisdiction.

# 11.4 LOSS OF USE INSURANCE

11.4.1 The Owner, at his option, may purchase and maintain such insurance as will insure him against loss of use of his property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of his property including consequential losses due to fire or other hazards however caused, to the extent covered by insurance under this Paragraph 11.4.

# SECTION 12 CHANGES IN THE WORK

# 12.1 CHANGE ORDERS

- 12.1.1 The Owner, without invalidating the Contract, may order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and the Contract Time being adjusted accordingly. All such changes in the Work shall be authorized by Change Order, and shall be performed under the applicable conditions of the Contract Documents.
- 12.1.2 A Change Order is a written order to the Contractor signed by the Owner and the Architect, issued after execution of the Contract, authorizing or directing a change in the Work and/or an adjustment in the Contract Sum or the Contract Time, or both. The Contract Sum and the Contract Time may be changed only by Change Order. A Change Order signed by the Contractor indicates his agreement with the terms thereof, including the adjustment in the Contract Sum and/or the Contract Time.
- 12.1.3 If the Contractor does not agree with the terms of the Change Order, the Contractor shall return the unsigned Change Order to the Owner. In such event, the Work, Contract Sum and /or Contract Time shall be adjusted as reflected in the Change Order, subject to the Contractor's rights under M.G.L. Chapter 30, Section 39J, but in no event shall the Contractor refuse the perform the Work as modified by the Change Order.

# 12.2 CLAIMS FOR ADDITIONAL COST

12.2.1 If the Contractor claims that any instructions or orders, whether oral, written, drawings, or otherwise, involve extra cost or time, and such instructions or orders are not accompanied by a written acknowledgment by the Owner that extra payment will be made or time extended, he shall promptly so notify the Owner in writing and shall not proceed with the work until he has received a further written order to proceed; except, as provided in Paragraph 10.3, in the case of an emergency affecting life or property.

- 12.2.2 Upon receipt from the Contractor of a written notice of claim as provided in Paragraph 12.2.1, the Architect shall review such claim, and if he determines that any work in dispute should proceed, he shall issue to the Contractor a written order, signed by the Owner, (1) to proceed, which shall approve or deny the Contractor's claim, in whole or in part, or (2) to proceed subject to a later determination by the Architect of the Contractor's right to extra payment.
- 12.2.3 To the extent that the Architect, when issuing the written order to proceed described in 12.2.2, approves the Contractor's claim, the Contract Sum and/or Contract Time shall be adjusted by Change Order. If the Architect, when issuing his written order to proceed denies, in whole or in part, the Contractor's claim, the Contractor shall proceed with the work without delay, subject to the Contractor's rights under M.G.L. Chapter 30, Section 39J. If the Architect, when issuing his written order to proceed, instructs the Contractor to proceed with the work subject to a later determination by the Architect of the Contractor's right to extra payment or time, the Contractor shall proceed with the Work without delay.

## 12.3 MINOR CHANGES IN THE WORK

12.3.1 The Architect shall have the authority to order minor changes in the Work that do not involve an adjustment in the Contract Sum or an extension of the Contract Time, and are not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order, and shall be binding on the Owner and the Contractor. The Contractor shall carry out such written orders promptly.

# 12.4 EQUITABLE ADJUSTMENTS

- 12.4.1 Equitable adjustments in the Contract Sum shall be determined according to one of the following methods, or a combination thereof; as determined by the Owner:
  - 1) fixed price basis, provided that the price shall be inclusive of items 3(a) through 3(d), below, and shall be computed in accordance with those provisions.
  - 2) Estimated lump sum basis to be adjusted in accordance with Contract unit prices, or other agreed upon unit prices, provided that the unit prices shall be inclusive of all costs related to such equitable adjustments.
  - 3) Time and materials basis, based upon a not to exceed, predetermined upset amount to be subsequently adjusted on the basis of actual costs comprised of items (a) through (d) below:
    - a) the costs at prevailing rates for direct labor, material and use of equipment;

- b) plus, the costs of Worker's Compensation Insurance, Liability Insurance, Federal Social Security and Massachusetts Unemployment Compensation; or as an alternative, the Contractor may elect to add a flat twenty-five (25%) percent to the total labor rate in (a), above;
- c) plus ten (10) percent of (a), above, for overhead, superintendence and profit which will be paid to the Contractor for the work of the Contractor and all subcontractors. The contracting parties referred to in this subparagraph shall agree upon the distribution of the ten (10) percent as a matter of contract between each other;
- d) plus actual direct premium costs of payment and performance bonds required of the Contractor provided there would be an appropriate credit for premiums for a credit change order
- e) if the extra work requires the use of heavy equipment, cranes and hoisting equipment, and special tools not on site and not originally required to be used upon the work, then the cost of transportation to and from the work site, not exceeding 100 miles, shall be included. The cost of extra work shall not include any cost or rental of small tools, buildings, or nay portion of the time of the Contractor's management or office personnel, or any allowance for use of capital.
- 12.4.2 If the net change is an addition to the Contract Sum, it shall include the Contractor's overhead, superintendence and profit. On any change that involves a net credit, no allowance for overhead superintendence and profit shall be figured. For any change that does not include labor performed or materials installed in the Project, there will be no markup for the contractor's overhead, superintendence, and profit, notwithstanding any net increase in the Contract Sum. Charges for small tools known as "tools of the trade" are not to be computed in the amount of an equitable change.

# SECTION 13 UNCOVERING AND CORRECTION OF WORK

# 13.1 UNCOVERING OF WORK

- 13.1.1 If any portion of the Work should be covered contrary to the request of the Architect or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the Architect, be uncovered for his observation and shall be replaced at the Contractor's expense.
- 13.1.2 If any other portion of the Work has been covered which the Architect has not specifically requested to observe prior to being covered, the Architect, with the approval of the Owner, may request to see such Work and it shall be uncovered by the Contractor. If such Work be found in accordance with the Contract

Documents, the cost of uncovering and replacement shall, by appropriate Change Order, be charged to the Owner. If such Work be found not in accordance with the Contract Documents, the Contractor shall pay such costs unless it is found that this condition was caused by the Owner or a separate contractor as provided in Article 6, in which event the Owner shall be responsible.

# 13.2 CORRECTION OF WORK

- 13.2.1 The Contractor shall promptly correct all Work rejected by the Architect as defective or as failing to conform to the Contract Documents whether observed before or after Substantial Completion and whether or not fabricated, installed or completed. The Contractor shall bear all costs of correcting such rejected Work, including compensation for the Architect's additional services made necessary thereby and any costs, loss, or damages to the Owner resulting from such failure or defect.
- 13.2.2 If, within one year after the Date of Substantial Completion of the Work or designated portion thereof or within one year after acceptance by the Owner of designated equipment or within such longer period of time as may be prescribed by law or by the terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be defective or not in accordance with the Contract Documents, the Contractor shall correct it promptly after receipt of a written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. This obligation shall survive termination of the Contract. The Owner shall give such notice promptly after discovery of the condition.
- 13.2.3 The Contractor shall remove from the site all portions of the Work which are defective or non-conforming and which have not been corrected under Subparagraphs 4.5.1, 13.2.1, and 13.2.2, unless removal is waived by the Owner.
- 13.2.4 If the Contractor fails to correct defective or nonconforming Work as provided in Subparagraphs 4.5.1, 13.2.1, and 13.2.2, the Owner may correct it in accordance with Paragraph 3.4.
- 13.2.5 If the Contractor does not proceed with the correction of such defective or non-conforming Work within a reasonable time fixed by written notice from the Architect, the Owner may remove it and may store the materials or equipment at the expense of the Contractor. If the Contractor does not pay the cost of such removal and storage within ten days thereafter, the Owner may upon ten additional days written notice, sell such Work at auction or at private sale and shall account for the net proceeds thereof, after deducting all the costs that should have been borne by the Contractor, including compensation for the Architect's additional services made necessary thereby. If such proceeds of sale do not cover all costs which the Contractor should have borne, the difference shall be charged to the Contractor and an appropriate Change Order shall be issued. If the payments then

or thereafter due the Contractor are not sufficient to cover such amount, the Contractor shall pay the difference to the Owner.

- 13.2.6 The Contractor shall bear the cost of making good all work of the Owner or separate contractors destroyed or damaged by such correction or removal.
- 13.2.7 Nothing contained in this Paragraph 13.2 shall be construed to establish a period of limitation with respect to any other obligation which the Contractor might have under the Contract Documents, including Paragraph 4.5 hereof. The establishment of the time period of one year after the Date of Substantial Completion or such longer period of time as may be prescribed by law or by the terms of any warranty required by the Contract Documents relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which his obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to his obligations other than specifically to correct the Work.

# 13.3 ACCEPTANCE OF DEFECTIVE OR NON-CONFORMING WORK

13.3.1 If the Owner prefers to accept defective or non-conforming Work, he may do so instead of requiring its removal and correction, in which case a Change Order will be issued to reflect a reduction in the Contract Sum where appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

# **SUPPLEMENTARY GENERAL CONDITIONS - PART I**

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# SUPPLEMENTARY GENERAL CONDITIONS - PART I

# STATUTORY PROVISIONS FOR MASSACHUSETTS PUBLIC CONSTRUCTION CONTRACTS

The following provisions are required by or are intended to be consistent with requirements of Massachusetts statutes governing public construction contracts in the Commonwealth of Massachusetts (hereinafter referred by statute to be included herein shall be deemed to be so included. In addition, the parties recognize that other rights, duties, and obligations with respect to public construction contracts are provided for in the Contract Documents. In case of conflict between the provisions of these Supplementary General Conditions and other provisions in the Contract Documents, the provisions of these Supplementary General Conditions shall govern. In case of conflict between the provisions of these Supplementary General Conditions and the provisions of any applicable statute, the statutory provisions shall govern. Where the term "awarding authority" appears in the following paragraphs, it shall be taken as meaning the Owner.

# ARTICLE 1 – PAYMENT, CONTRACT ADMINISTRATION, etc.

1.1 "Or Equal" Clause: (Statutory reference: M.G.L. Chapter 30, Section 39M(b)) This Paragraph 1.1 applies to every contract subject to M.G.L. Chapter 30, Section 39M(b).

This Paragraph 1.1 applies to every contract for the construction, reconstruction or repair of any public work or for the purchase of any material by the Commonwealth, any political subdivision thereof, or any county, city, town, district or housing authority (above certain dollar limits, as stated in the statute), and to contracts awarded pursuant to M.G.L. Chapter 149, Sections 44A through 44H. The said Sections 44A through 44H apply to every contract for the construction, reconstruction, installation, demolition, maintenance or repair of any building by a department, agency, board, commission, authority, or other instrumentality or the Commonwealth or political subdivision thereof, or two or more subdivisions thereof, but not including the Massachusetts Bay Transportation Authority, estimated to cost more than a dollar amount set forth in M.G.L. Chapter 149, Section 44A.

Every such contract shall provide that an item equal to that named or described in the said specifications may be furnished. Where products or materials are prescribed by manufacturer name, trade name, or catalog reference, the words "or approved equal" shall be understood to follow. An item shall be considered equal to the item so named or described if, in the opinion of the awarding authority:

- a. It is at least equal in quality, durability, appearance, strength, and design;
- b. it will perform at least equally the function imposed by the general design for the public work being contracted for or the material being purchased, and
- c. it conforms substantially, even with deviations, to the detailed requirements for the items as indicated by the specifications. For each item of material the specifications shall provide for either a minimum of three named brands of material or a description of

material which can be met by a minimum of three manufacturers or producers, and for the equal of any one of said name or described materials.

Any structural or mechanical changes made necessary to accommodate substituted equipment under this paragraph shall be at the expense of the Contractor or Subcontractor responsible for the work item. See other paragraphs of General and Supplementary Conditions for procedures to be used in determining compliance with the standards of this paragraph.

1.2 Delays: (Statutory reference: Chapter 30, Section 390). This Paragraph 1.2 applies to every contract subject to M.G.L. Chapter 30, Section 39M and to every contract subject to Chapter 149, Sections 44A through 44H.

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) give the general contractor against the awarding authority, but nothing in provisions (a) and (b) shall in any way change, modify or alter any other rights which the general contractor or the subcontractor may have against each other.

Except as otherwise provided by law and by this Paragraph 1.2, the Contractor shall not be entitled to damages on account of any hindrances or delays, avoidable or unavoidable; but if such delay be occasioned by the awarding authority, the Contractor may be entitled to an extension of time only, in which to complete the work, to be determined by the Architect.

- (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 fifteen days or more or due to a failure of the awarding authority to act within the time specified in this contract, the awarding authority shall make an adjustment in the contract price for any increase in the cost of performance of this 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) 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 this contract and, except for costs due to a suspension order, the awarding authority shall not approve any costs in the claim incurred more than twenty days before the general contractor notified the awarding authority in writing of the act or failure to act involved in the claim.
- 1.3 Deviations: (Statutory referenced: M.G.L. Chapter 30, section 39I) This Paragraph 1.3 applies to every contract for the construction, alteration, maintenance, repair or demolition of,

or addition to, any public building or public works for the Commonwealth or any political subdivision thereof.

The Contractor shall perform all the work required by this contract in conformity with the plans and specifications contained therein. No willful and substantial deviation from said plans and specifications shall be made unless authorized in writing by the awarding authority or by the Engineer or Architect in charge of the work who is duly authorized by the awarding authority to approve such deviations. In order to avoid delays in the prosecution of the work required by such contract, such deviation from the plans or specifications may be authorized by a written order of the awarding authority or such Engineer or Architect so authorized to approve such deviation. Within thirty days thereafter, such written order shall be confirmed by a certificate of the awarding authority stating: (1) If such deviation involves any substitution or elimination of materials, fixtures or equipment, the reasons why such materials, fixtures or equipment were included in the first instance and the reasons for substitution or elimination, and, if the deviation is of any other nature, the reasons for such deviation, giving justification therefor (2) that the specified deviation does not materially injure the project as a whole; (3) that either the work substituted for the work specified is the same cost and quality, or that an equitable adjustment has been agreed upon between the awarding authority and the Contractor and the amount in dollars of said adjustment; and (4) that the deviation is in the best interest of the awarding authority.

Such certificate shall be signed under the penalties of perjury and shall be a permanent part of the file record of the work contracted for.

Whoever violates any provision of this section willfully and with intent to defraud shall be punished by a fine of not more than five thousand dollars or by imprisonment for not more than six months, or both.

1.4 Finality of Decisions by Awarding Authority or Architect: (Statutory reference: M.G.L. Chapter 30, Section 39J) This Paragraph 1.4 applies to every contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building or public works by the Commonwealth or by any county, city, district, board, commission, or other public body, when the amount of the contract exceeds the amount stated in M.G.L. Chapter 30, Section 39J.

Notwithstanding any contrary provision of this contract, a decision by the contracting body or by any administrative board, official or agency, or by any architect or engineer, on a dispute, whether of fact or of law, arising under said contract 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.

- 1.5 Differing Site Conditions: (Statutory reference: M.G.L. Chapter 30, Section 39N) This Paragraph 1.5 applies to every contract subject to M.G.L. Chapter 30, Section 39M and to every contract subject to M.G.L. Chapter 49, Sections 44A through 44H.
- 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 awarding 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 such a nature as to cause 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.

1.6 Timely Decision by Awarding Authority: (Statutory reference: M.G.L. Chapter 30, Section 39P) This Paragraph 1.6 applies to every contract subject to M.G.L. Chapter 30, Section 39M, and to every contract subject to M.G.L. Chapter 149, Sections 44A through 44H.

In every case in which this contract requires the awarding authority, any official, its Architect or Engineer to make a decision on interpretation of the specifications, approval of equipment, material or any other approval, or progress of the work, the decision shall be made promptly and, in any event, no later than thirty days after the written submission for decision; but if such decision requires extended investigation and study, the awarding authority, the official, Architect or Engineer shall, within thirty days after the receipt of the submission, give the party making the submission written notice of the reasons why the decision cannot be made within the thirty-day period and the date by which the decision will be made.

1.7 Certificate of Appropriation: (Statutory reference: M.G.L. Chapter 44, Section 31C) This Paragraph 1.7 applies to contracts for construction, reconstruction, alteration, remodeling, repair or demolition of any public building or public work by any city or town costing more than the amount set forth in M.G.L. Chapter 44, Section 31C.

This Contract shall not be deemed to have been made until the auditor or accountant or other officer of the city or town having similar duties has certified thereon that an appropriation in the amount of such contract is available therefor and that an officer or agent of the city, town, or awarding-authority has been authorized to execute said contract and approve all requisitions and change orders. No order to the Contractor for a change in or addition to the work to be performed under a contract subject to this section, whether in the form of a drawing, plan, detail or any other written instruction, unless it is an order which the Contractor is willing to perform without any increase in the contract price, shall be deemed to have been given until the auditor or accountant, or other officer of the awarding authority having similar duties, has certified thereon that an appropriation in the amount of such order is available therefor; but such certificate shall not be construed as an admission by the awarding authority of its liability to pay for such work. The certificate of the auditor or accountant or other officer of the awarding authority having similar duties, that an appropriation in the amount of such contract or order is available shall bar any defense by the awarding authority on the ground of insufficient appropriation; and any law barring payment in excess of appropriations shall not apply to amounts covered by any certificate under this section.

- 1.8 Method of Payment: (Statutory reference: M.G.L. Chapter 30, Section 39K) This Paragraph 1.8 applies to every contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building by the Commonwealth, or by any county, city, town, district, board, commission or other public body, when the amount is more than two thousand dollars, or the amount set forth in M.G.L. Chapter 30, Section 39K.
- 1.8.1 Within fifteen days after receipt from the Contractor, at the place designated by the awarding authority if such a place is so designated, of a periodic estimate requesting payment of the amount due for the preceding month, the awarding authority will make a periodic payment to the Contractor for the work performed during the preceding month and for the materials not incorporated in the work but delivered and suitably stored at the site (or at some location agreed upon in writing) to which the Contractor has title or to which a Subcontractor has title and has authorized the Contractor to transfer title to the awarding authority, upon certification by the contractor that he is the lawful owner and that the materials are free from all encumbrances, but less (1) a retention based on its estimate of the fair value of its claims against the Contractor and less (2) a retention for direct payments to Subcontractors based on demands for same in accordance with the provisions of Paragraph 1.10 of these Supplementary General Conditions, and less (3) a retention not exceeding five percent of the approved amount of the periodic payment. After the receipt of a periodic estimate requesting final payment and within sixty-five days after (a) the Contractor fully completes the work or substantially completes the work so that the value of the work remaining to be done is, in the estimate of the awarding authority, less than one percent of the original contract price, or (b) the Contractor substantially completes the work and the awarding authority takes possession for occupancy, whichever occurs first, the awarding authority shall pay the contractor the entire balance due on the contract less (1) a retention based on its estimate of the fair value of its claims against the Contractor and of the cost of completing the incomplete and unsatisfactory items of work and less (2) a retention for direct payments to Subcontractors based on demands for same in accordance with the provisions of Paragraph 1.10 of these Supplementary General Conditions, or based on the record of payments by the Contractor to the Subcontractors under this contract if such record of payment indicates that the Contractor has not paid Subcontractors as provided in Paragraph 1.10. If the awarding authority fails to make payment as herein provided, there shall be added to each such payment daily interest at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston commencing on the first day after said payment is due and continuing until the payment is delivered or mailed to the contractor; provided, that no interest shall be due, in any event, on the amount due on a periodic estimate for final payment until fifteen days...after receipt of such periodic estimate from the Contractor, at the place designated by the awarding authority if such a place is so designated. The Contractor agrees to pay to each Subcontractor a portion of any such interest paid in accordance with the amount due each Subcontractor.
- 1.8.2 The awarding authority may make changes in any periodic estimate submitted by the Contractor, and the payment due on said periodic estimate shall be computed in accordance with the change so made, but such changes or any requirement for a corrected periodic estimate shall not affect the due date for the periodic payment or the date for the commencement of interest charges on the amount of the periodic payment computed in accordance with the changes made, as provided herein; provided, that the awarding authority may, within seven days after receipt, return to the Contractor for correction, any periodic estimate which is not in

the required form or which contains computations not arithmetically correct and, in that event, the date of receipt of such periodic estimate shall be the date of receipt of the corrected periodic estimate in proper form and with arithmetically correct computations. The date of receipt of a periodic estimate received on a Saturday shall be the first working day thereafter.

- 1.8.3 All periodic estimates shall be submitted to the awarding authority, or to its designee as set forth in writing to the Contractor, and the date of receipt by the awarding authority or its designee shall be marked on the estimate. All periodic estimates shall contain a separate item for each subtrade and each sub-subtrade listed in sub-bid form as required by the specifications, and a column listing the amount paid to each subcontractor and sub-subcontractor as of the date the periodic estimate is filed. The person making payment for the awarding authority shall add the daily interest provided for herein to each payment for each day beyond the due date based on the date of receipt marked on the estimate.
- 1.8.4 A certificate of the Architect to the effect that the Contractor has fully or substantially completed the work shall, subject to the provisions of Paragraph 1.4 of these Supplementary General Conditions, be conclusive for the purposes of this Paragraph 1.8.
- 1.8.5 Notwithstanding the provisions of this section, at any time after the value of the work remaining to be done is, in the estimation of the awarding authority, less than 1 per cent of the adjusted contract price, or the awarding authority has determined that the contractor has substantially completed the work and the awarding authority has taken possession for occupancy, the awarding authority may send to the general contractor by certified mail, return receipt requested, a complete and final list of all incomplete and unsatisfactory work items, including, for each item on the list, a good faith estimate of the fair and reasonable cost of completing such item. The general contractor shall then complete all such work items within 30 days of receipt of such list or before the contract completion date, whichever is later. If the general contractor fails to complete all incomplete and unsatisfactory work items within 45 days after receipt of such items furnished by the awarding authority or before the contract completion date, whichever is later, subsequent to an additional 14 days written notice to the general contractor by certified mail, return receipt requested, the awarding authority may terminate the contract and complete the incomplete and unsatisfactory work items and charge the cost of same to the general contractor and such termination shall be without prejudice to any other rights or remedies the awarding authority may have under the contract. The awarding authority shall note any such termination in the evaluation form to be filed by the awarding authority pursuant to the provisions of section 44D of chapter 149.
- 1.9 Method of Payment: (Statutory reference: M.G.L. Chapter 30, section 39G) This Paragraph 1.9 applies to every contract for the construction, reconstruction, alteration, remodeling, repair or improvement of public ways; including bridges and other highway structures, sewers and water mains, airports and other public works entered into with the commonwealth, or any agency or political subdivision thereof.
- 1.9.1 Upon substantial completion of the work required by a contract with the commonwealth, or any agency or political subdivision thereof, for the construction, reconstruction, alteration, remodeling, repair or improvement of public ways, including bridges and other highway structures, sewers and water mains, airports and other public works, the contractor shall present

in writing to the awarding authority its certification that the work has been substantially completed. Within twenty-one days thereafter, the awarding authority shall present to the contractor either a written declaration that the work has been substantially completed or an itemized list of incomplete or unsatisfactory work items required by the contract sufficient to demonstrate that the work has not been substantially completed. The awarding authority may include with such list a notice setting forth a reasonable time, which shall not in any event be prior to the contract completion date, within which the contractor must achieve substantial completion of the work. In the event that the awarding authority fails to respond, by presentation of a written declaration or itemized list as aforesaid, to the contractor's certification within the twenty-one day period, the contractor's certification shall take effect as the awarding authority's declaration that the work has been substantially completed.

- 1.9.2 Within sixty-five days after the effective date of a declaration of substantial completion, the awarding authority shall prepare and forthwith send to the contractor for acceptance a substantial completion estimate for the quality and price of the work done and all but one percent retainage on that work, including the quantity, price and all but one percent retainage for the undisputed part of each work item and extra work item in dispute but excluding the disputed part thereof, less the estimated cost of completing all incomplete and unsatisfactory work items and less the total periodic payments made to date for the work. The awarding authority also shall deduct from the substantial completion estimate an amount equal to the sum of all demands for direct payments filed by subcontractors and not yet paid to subcontractors or deposited in joint accounts pursuant to section 1.10, but no contract subject to said section 1.10 shall contain any other provision authorizing the awarding authority to deduct any amount by virtue of claims asserted against the contract by subcontractors, material suppliers or others.
- 1.9.3 If the awarding authority fails to prepare and send to the contractor any substantial completion estimate required by section 1.9.2, on or before the date herein above set forth, the awarding authority shall pay to the contractor interest on the amount which would have been due to the contractor pursuant to such substantial completion estimate, at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston from such date to the date on which the awarding authority sends that substantial completion estimate to the contractor for acceptance or to the date of payment therefor, whichever occurs first. The awarding authority shall include the amount of such interest in the substantial completion estimate.
- 1.9.4 Within fifteen days after the effective date of the declaration of substantial completion, the awarding authority shall send to the contractor by certified mail, return receipt requested, a complete list of all incomplete or unsatisfactory work items, and unless delayed by causes beyond his control, the contractor shall complete all such work items within forty-five days after the receipt of such list or before the then contract completion date, whichever is later. If the contractor fails to complete such work within such time, the awarding authority may, subsequent to seven days' written notice to the contractor by certified mail, return receipt requested, terminate the contract and complete the incomplete or unsatisfactory work items and charge the cost of same to the contractor.
- 1.9.5 Within thirty days after receipt by the awarding authority of a notice from the contractor stating that all of the work required by the contract has been completed, the awarding authority

shall prepare and forthwith send to the contractor for acceptance, a final estimate for the quantity and price of the work done and all retainage on that work less the payments made to date, unless the awarding authority's inspection shows that work items required by the contract remain incomplete or unsatisfactory, or that documentation required by the contract has not been completed. If the awarding authority fails to prepare and sends to the contractor the final estimate within thirty days after receipt of notice of completion, the awarding authority shall pay to the contractor interest on the amount which would have been due to the contractor pursuant to such final estimate at the rate hereinabove provided from the thirtieth day after such completion until the date on which the awarding authority sends the final estimate to the contractor for acceptance or the date of payment therefor, whichever occurs first, provided that the awarding authority's inspection shows that no work items required by the contract remain incomplete or unsatisfactory. Interest shall not be paid hereunder on amounts for which interest is required to be paid in connection with the substantial completion estimate as hereinabove provided. The awarding authority shall include the amount of the interest required to be paid hereunder in the final estimate.

- 1.9.6 The awarding authority shall pay the amount due pursuant to any substantial completion or final estimate within thirty-five days after receipt of written acceptance for such estimate from the contractor and shall pay interest on the amount due pursuant to such estimate at the rate hereinabove provided from that thirty-fifth day to the day of payment. Within 15 days after receipt from the contractor, if such place is so designated by the awarding authority, if such place is so designated, of a periodic estimate requesting payment of the amount due for the preceding periodic estimate period, the awarding authority shall make a periodic payment to the contractor for the work performed during the preceding periodic estimate period and for the materials not incorporated in the work but delivered and suitably stored at the site, or at some location agreed upon in writing, to which the contractor has title or to which a subcontractor has title and has authorized the contractor to transfer title to the awarding authority, upon certification by the contractor that he is the lawful owner and that materials are free from all encumbrances. The awarding authority shall include with each such payment interest on the amount due pursuant to such periodic estimate at the rate herein above provided from the due date. In the case of periodic payments, the contracting authority may deduct from its payment a retention based on its estimate of the fair value of its claim against the contractor, a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section 1.10, and a retention to secure satisfactory performance of the contractual work not exceeding five percent of the approved amount of any periodic payment, and the same right to retention shall apply to bonded subcontractors entitled to direct payment under section 1.10; provided, that a five percent value of all items that are planted in the ground shall be deducted from the periodic payments until final acceptance.
- 1.9.7 No periodic, substantial completion or final estimate or acceptance or payment thereof shall bar a contractor from reserving all rights to dispute the quantity and amount of, or the failure of the awarding authority to approve a quantity and amount of, all or part of any work item or extra work item.
- 1.9.8 Substantial completion, for the purpose of this section 1.9, shall mean either that the work required by the contract has been completed except for work having a contract price of less than one 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 required by the contract.

- 1.10 Direct Payment: (Statutory reference: M.G.L. Chapter 30, Section 39F) This Paragraph 1.10 applies to every contract awarded pursuant to M.G.L. Chapter 149, Sections 44A through 44J, and (with the exception of Subparagraph 1.10.9) to every contract awarded pursuant to M.G.L. Chapter 30, Section 39M.
- 1.10.1 Forthwith after the General Contractor receives payment on account of a periodic estimate, the General Contractor shall pay to each subcontractor the amount paid for the labor performed and the materials furnished by that Subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the Subcontractor by the General Contractor.
- 1.10.2 Not later than the sixty-fifth day after each Subcontractor substantially completes the 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 barrings such payment and also less any amount claimed due from the Subcontractor by the General Contractor.
- 1.10.3 Each payment made by the awarding authority to the General Contractor pursuant to Subparagraphs 1.10.1 and 1.10.2 of this Paragraph 1.10 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 for payment to the Subcontractor as provided in Subparagraphs 1.10.1 and 1.10.2, the awarding authority shall act upon the demand as provided in this Paragraph 1.10.
- 1.10.4 If, within seventy days after the Subcontractor has substantially completed the subcontract work, the Subcontractor has not received from the 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 to 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 ten 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 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.

- 1.10.5 Within fifteen days after receipt of the demand by the awarding authority, but in no event prior to the seventieth day after substantial completion of the subcontract work, the awarding authority shall make direct payment to the Subcontractor of the balance due under the subcontract, including any amount due for extra labor and materials furnished to the General Contractor, less any amount (i) retained by the awarding authority as the estimated cost of completing the incomplete or unsatisfactory items of work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the General Contractor in the sworn reply; provided, that the awarding authority shall not deduct from a direct payent 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 1.10.4 The awarding authority shall make further direct payments to the Subcontractor forthwith after the removal of the basis for deduction from direct payments made as provided in parts (i) and (ii) of this Subparagraph.
- 1.10.6 The awarding authority shall forthwith deposit the amounts deducted from a direct payment as provided in part (iii) of the Subparagraph 1.10.5 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 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.
- 1.10.7 All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to Subparagraph 1.10.6 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 or receipt of such demands from subcontractors. All direct payments shall discharge the obligation of the awarding authority to the Contractor to the extent of such payment.
- 1.10.8 The awarding authority shall deduct from payments to a General Contractor amounts which, together with the deposits in interest-bearing accounts pursuant to Subparagraph 1.10.6, are sufficient to satisfy all unpaid balances of demands for direct payments 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.
- 1.10.9 If the Subcontractor does not receive payment as provided in Subparagraph 1.10.1 or if the General Contractor does not submit a periodic estimate for the value of the labor or materials performed or furnished by the Subcontractor and the Subcontractor does not receive payment

for same when due less the deductions provided for in Subparagraph 1.10.1, the Subcontractor may demand direct payment by following the procedure in Subparagraph 1.10.4 and the General Contractor may file a sworn reply as provided in that same Subparagraph. A demand made after the first day of the month following that for which the Subcontractor performed or furnished the labor and materials for which the Subcontractor seeks payment shall be valid even if delivered or mailed prior to the time payment was due on a periodic estimate from the General Contractor. Thereafter the awarding authority shall proceed as provided in Subparagraphs 1.10.5, 1.10.6, 1.10.7 and 1.10.8.

- 1.10.10 Any assignment by a Subcontractor of the rights under this section to a surety company furnishing a bond under the provisions of M.G.L. Chapter 149, Section 29 shall be invalid. The assignment and subrogation rights of the surety to amounts included in a demand for direct payment which are in the possession of the awarding authority or which are on deposit pursuant to Subparagraph 1.10.6 shall be subordinate to the rights of all Subcontractors who are entitled to be paid under this section and who have not been paid in full.
- 1.10.11 "Subcontractor" as used in this Paragraph 1.10 (i) for contracts awarded as provided in M.G.L. Chapter 149, Sections 44A-44J, inclusive, shall mean a person who files a sub-bid and receives a subcontract as a result of that filed sub-bid or who is approved by the awarding authority in writing as a person performing labor or both performing labor and furnishing materials pursuant to a contract with the General Contractor, (ii) for contracts awarded as provided in M.G.L. Chapter 30, Section 39M(a), shall mean a person approved by the awarding authority in writing as a person performing labor or both performing labor and furnishing materials pursuant to a contract with the General Contractor.
- 1.10.12 A General Contractor or a Subcontractor shall enforce a claim to any portion of the amount of a demand for direct payment deposited as provided in Subparagraph 1.1.6 by a petition in equity in the superior court against the other and the bank shall not be a necessary party. A Subcontractor shall enforce a claim for direct payment or a right to require a deposit as provided in Subparagraph 1.10.6 by a petition in equity in the superior court against the awarding authority and the Contractor shall not be a necessary party. Upon motion of any party the court shall advance for speedy trial any petition filed as provided in this paragraph. M.G.L. Chapter 231, Sections 59 and 59B shall apply to such petitions. The Court shall enter an interlocutory decree upon which execution shall issue for any part of a claim found due pursuant to Sections 59 and 59B and, upon motion of any party, shall advance for speedy trial the petition to collect the remainder of the claim. Any party aggrieved by such interlocutory decree shall have the right to appeal therefrom as from a final decree. The court shall not consolidate for trial the petition of any Subcontractor with the petition of one or more Subcontractors or the same general contract unless the court finds that a substantial portion of the evidence of the same events during the course of construction (other than the fact that the claims sought to be consolidated arise under the same general contract) is applicable to the petitions sought to be consolidated and that such consolidation will prevent unnecessary duplication of evidence. A decree in any such proceeding shall not include interest on the disputed amount deposited in excess of the interest earned for the period of any such deposit. No person except a Subcontractor filing a demand for direct payment for which no funds due the Contractor are available for direct payment shall have a right to file a petition in a court of equity against the awarding authority claiming a demand for direct payment is premature, and such Subcontractor

must file the petition before the awarding authority has made a direct payment to the Subcontractor and has made a deposit of the disputed portion as provided in part (iii) of Subparagraph 1.10.5 and in Subparagraph 1.10.6.

- 1.10.13 In any petition to collect any claim for which a Subcontractor has filed a demand for direct payment the court shall, upon motion of the General Contractor, reduce by the amount of any deposit of a disputed amount by the awarding authority as provided in part (iii) of Subparagraph 1.10.5 and in Subparagraph 1.10.6 any amount held under a trustee writ or pursuant to a restraining order or injunction.
- 1.11 Discharge or Release of Bonds (Statutory reference: M.G.L. c.30, section 40) This Paragraph 1.11 applies to every contract awarded for the construction or repair of public buildings or other public works.
- 1.11.1 Bonds given to the commonwealth, any county, city, town or political subdivision to secure the performance of contracts for the construction or repair of public buildings or other public works may be discharged or released by the awarding authority, upon such terms as it deems expedient, after the expiration of one year from the time of completion, subject to Section 1.8, of the work contracted to be done; provided that no claim filed under said bond is pending, and provided further, that no such bonds shall be discharged or released prior to the expiration of all special guarantees provided for in the contract unless new bonds in substitution therefor specifically relating to the unexpired guarantees shall be taken.

# ARTICLE 2 – WAGES AND EMPLOYMENT PRACTICES

- 2.1 Preference To Veterans and Citizens In Public Works; Rate of Wages: (Statutory reference: M.G.L. c. 149, Section 26) This Paragraph 2.1 applies to every contract or subcontract for the construction of public works by the Commonwealth or by a county, town or district.
- 2.1.1 In the employment of mechanics and apprentices, teamsters, chauffeurs and laborers, preference shall first be given to citizens of the Commonwealth who have been residents of the Commonwealth for at least six months at the commencement of their employment, who are veterans as defined in M.G.L. Chapter 4, Section 7, clause 43, and who are qualified to perform the work to which the employment relates and, within such preference, preference shall be given to service-disabled veterans; and secondly, to citizens of the Commonwealth generally who have been residents of the Commonwealth for at least six months at the commencement of their employment, and if they cannot be obtained in sufficient numbers, then to citizens of the United States, and every contract for such work shall contain a provision to this effect. Each county, town or district in the construction of public works, or persons contracting or subcontracting for such works, shall give preference to veterans and citizens who are residents of such county, town, authority or district, and within such preference, preference shall be given to service-disabled veterans.
- 2.1.2 The rate per hour of the wages paid to said mechanics and apprentices, teamsters, chauffeurs and laborers in the construction of public works shall not be less than the rate or rates of wages to be determined by the Commissioner as hereinafter provided; provided that

the wages paid to laborers employed on said works shall not be less than those paid to laborers in the municipal service of the town or towns where said works are being constructed; provided further, that where the same public work is to be constructed in two or more towns, the wages paid to laborers shall not be less than those paid to laborers in the municipal town paying the highest rate; provided further, that if, in any of the towns where the works are to be constructed. a wage rate or wage rates have been established in certain trades and occupations by collective agreements or understandings in the private construction industry between organized labor and employers, the rate or rates to be paid on said works shall not be less than the rates so established; provided further, that in towns where no such rate or rates have been established, the wages paid to mechanics, teamsters, chauffeurs and laborers on public works, shall not be less than the wages paid to the employees in the same trades and occupations by private employers engaged in the construction industry. This section shall also apply to regular employees of the Commonwealth or a county, town, authority or district, when such employees are employed in the construction, addition to or alteration of public buildings for which special appropriations of more than one thousand dollars are provided. Payments by employers to health and welfare plans, pension plans and supplementary unemployment benefit plans under collective bargaining agreements or understandings between organized labor and employers shall be included for the purpose of establishing minimum wage rates as herein provided.

- 2.2 List of Jobs; Classifications; Determination of Rate of Wages; Schedule: (Statutory reference: M.G.L. Chapter 149, Section 27) This Paragraph 2.2. applies to every contract or subcontract for the construction of public works by the Commonwealth, or by a county, town or district.
- 2.2.1 The commissioner shall prepare, for the use of such public officials or public bodies whose duty it shall be to cause public works to be constructed, a list of the several jobs usually performed on various types of public works upon which mechanics and apprentices, teamsters, chauffeurs and laborers are employed, including the transportation of gravel or fill to the site of said public works or the removal of surplus gravel or fill from such site. The commissioner shall classify said jobs, and he may revise such classification from time to time, as he may deem advisable. Prior to awarding a contract for the construction of public works, said public official or public body shall submit to the commissioner a list of the jobs upon which mechanics and apprentices, teamsters, chauffeurs and laborers are to be employed, and shall request the commissioner to determine the rate of wages to be paid on each job. Each year after the awarding of the contract, the public official or public body shall submit to the commissioner a list of the jobs upon which mechanics and apprentices and laborers are to be employed and shall request that the commissioner update the determination of the rate of wages to be paid on each job. The general contractor shall annually obtain updated rates from the public official or public body and no contractor or subcontractor shall pay less than the rates so established. Said rates shall apply to all persons engaged in transporting gravel or fill to the site of said public works or removing gravel or fill from such site, regardless of whether such persons are employed by a contractor or subcontractor or are independent contractors or owner-operators. The commissioner, subject to the provisions of Section 2.1, shall proceed forthwith to determine the same, and shall furnish said official or public body with a schedule of such rate or rates of wages as soon as said determination shall have been made. In advertising or calling for bids for said works, the awarding official or public body shall incorporate said schedule in the advertisement or call for bids by an appropriate reference thereto, and shall furnish a copy of said schedule,

without cost, to any person requesting the same. Said schedule shall be made a part of the contract for said works and shall continue to be the minimum rate or rates of wages for said employees during the life of the contract. Any person engaged in the construction of said works shall cause a legible copy of said schedule and subsequent updates to be kept posted in a conspicuous place at the site of said works during the life of the contract. An apprentice performing work on a project subject to this section shall maintain in his possession an apprentice identification card issued pursuant to section M.G.L. Chapter 23, Section 11W. The aforesaid rates of wages in the schedule of wage rates shall include payments by employers to health and welfare plans, pension plans and supplementary unemployment benefit plans as provided in said Section 2.1, and such payments shall be considered as payments to persons under this section performing work as herein provided. Any employer engaged in the construction of such works who does not make payments to a health and welfare plan, a pension plan and a supplementary unemployment benefit plan, where such payments are included in said rates of wages, shall pay the amount of said payments directly to each employee engaged in said construction. Whoever shall pay less than said rate or rates of wages, including payments to health and welfare funds and pension funds, or the equivalent payment in wages, on said works to any person performing work within classifications as determined by the commissioner, and whoever, for himself, or as representative, agent or officer of another, shall take or receive for his own use or the use of any other person, as a rebate, refund or gratuity, or in any other guise, any part or portion of the wages, including payments to health and welfare funds and pension funds, or the equivalent payment in wages, paid to any such person for work done or service rendered on said public works, shall have violated this section and shall be punished or shall be subject to a civil citation or order as provided in M.G.L. Chapter 149, Section 27C. The president and treasurer of a corporation and any officers or agents having the management of such corporation shall also be deemed to be employers of the employees of

2.2.2 When an investigation by the attorney general's office reveals that a contractor or subcontractor has violated this section by failing to pay said rate or rates of wages, including payments to health and welfare funds and pension funds, or the equivalent payment in wages, on said works to any person performing work within classifications as determined by the commissioner, or that a contractor or subcontractor has, for himself, or as representative, agent or officer of another, taken or received for his own use or the use of any other person, as a rebate, refund or gratuity, or in any other guise, any portion of the wages, including payments to health and welfare funds and pension funds, or the equivalent payment in wages, paid to any such person for work done or service rendered on said public works, the attorney general may, upon written notice to the contractor or subcontractor and the sureties of the contractor or subcontractor, and after a hearing thereon, order work halted on the part of the contract on which such wage violations occurred, until the defaulting contractor or subcontractor has filed with the attorney general's office a bond in the amount of such penal sum as the attorney general shall determine, conditioned upon payment of said rate or rates of wages, including payments to health and welfare funds and pension funds, or the equivalent payment in wages, on said works to any person performing work within classifications as determined by the commissioner. An employee claiming to be aggrieved by a violation of this section may, 90 days after the filing of a complaint with the attorney general, or sooner if the attorney general assents in writing, and within 3 years after the violation, institute and prosecute in his own name and on his own behalf,

any corporation within the meaning of Sections 2.1 to 2.3, inclusive. Offers of restitution or

payment of restitution shall not be considered in imposing such punishment.

or for himself and for others similarly situated, a civil action for injunctive relief, for any damages
incurred, and for any lost wages and other benefits. An employee so aggrieved who prevails in
such an action shall be awarded treble damages, as liquidated damages, for any lost wages
and other benefits and shall also be awarded the costs of the litigation and reasonable attorneys'
fees

2.3 Employment Records To Be Kept By Contractor, Subcontractors; Statement of Compliance: (Statutory reference: M.G.L. c. 149, Section 27B) This Paragraph 2.3 applies to every contract or subcontract for the construction of public works by the Commonwealth, or by a county, town or district.

Every Contractor, Subcontractor or public body engaged in said public works to which Paragraph 2.3 of these Supplementary General Conditions applies shall keep a true and accurate records of all mechanics and apprentices, teamsters, chauffeurs and laborers employed thereon, showing the name, address and occupational classification of each such employee on said works, and hours worked by, and wages paid to, each such employee, and shall promptly furnish to the Attorney General or his representative, upon his request, a copy of said record, signed by the employer or his authorized agent under the penalties of perjury. For every week in which an apprentice is employed by a contractor, subcontractor or public body subject to this section, a photocopy of the apprentice's apprentice identification card, issued pursuant to M.G.L. Chapter 23, Section 11W, shall be attached to the records submitted under this section. Such records shall be open to inspection by any authorized representative of the department at any reasonable time, and as often as may be necessary. Every contractor and subcontractor required to keep such a record shall submit a copy of said record to the awarding authority directly and on a weekly basis.

Each such Contractor, Subcontractor or public body shall preserve its payroll records for a period of three years from the date of completion of the contract.

Each such Contractor, Subcontractor or public body shall furnish to the awarding authority directly within fifteen days after completion of its portion of the work a statement, executed by the Contractor, Subcontractor, or public body who supervises the payment of wages, in the following form.

SIAIL	EMENT OF COMPLIANCE		
I,			
	(Name of signatory party)	(Title)	
do her	eby state:		
	That I pay or supervise the payment of	of the persons employed by	
	(Contractor, Subcontractor or public b	oody)	
on the	(building or project)	and that all mechanics	
	(building or project)		
in acco	· ·	laborers employed on said project have r the provisions of sections twenty-six ar e of the General Laws.	•
	Signature		
	Title		

The above-mentioned copies of payroll records and statements of compliance shall be available for inspection by any interested party filing a written request to the awarding authority for such inspection and copying.

2.4 Wages Paid to Operators of Trucks and Other Equipment: (Statutory reference: M.G.L. c. 149, Section 27F) This Paragraph 2.4 applies to every contract for the construction of public works by the Commonwealth, or by a county, city, town or district.

No agreement of lease, rental or other arrangement, and no order or requisition under which a truck or any automotive or other vehicle or equipment is to be engaged in public works by the commonwealth or by a county, city, town or district, shall be entered into or given by any public official or public body unless said agreement, order or requisition contains a stipulation requiring prescribed rates of wages, as determined by the commissioner, to be paid to the operators of said trucks, vehicles or equipment. Any such agreement, order or requisition which does not contain said stipulation shall be invalid, and no payment shall be made thereunder. Said rates of wages shall be requested of said commissioner by said public official or public body, and shall be furnished by the commissioner in a schedule containing the classifications of jobs, and the rate of wages to be paid for each job. Said rates of wages shall include payments to health and welfare plans, or, if no such plan is in effect between employers and employees, the amount of such payments shall be paid directly to said operators. Whoever pays less than said rates of wages, including payments to health and welfare funds, or the equivalent in wages, on said works, and whoever accepts for his own use, or for the use of any other person, as a rebate, gratuity or in any other guise, any part or portion of said wages or health and welfare funds, shall have violated this section and shall be punished or shall be subject to a civil citation or order as

provided in M.G.L. Chapter 149, Section 27C. An employee claiming to be aggrieved by a violation of this section may, 90 days after the filing of a complaint with the attorney general, or sooner if the attorney general assents in writing, and within 3 years after the violation, institute and prosecute in his own name and on his own behalf, or for himself and for others similarly situated, a civil action for injunctive relief, for any damages incurred, and for any lost wages and other benefits. An employee so aggrieved who prevails in such an action shall be awarded treble damages, as liquidated damages, for any lost wages and other benefits and shall also be awarded the costs of the litigation and reasonable attorneys' fees.

2.5 Reserve Police Officers: (Statutory reference: M.G.L. Chapter 149, Section 34B) This Paragraph 2.5 applies to every contract for the construction, alteration, maintenance, repair or demolition of, or addition to, any public works for the Commonwealth or any political subdivision thereof.

The contractor shall pay to any reserve police officer employed by him in any city or town the prevailing rate of wages paid to regular police officers in such city or town.

2.6 Eight-hour Day, etc.: (Statutory reference: M.G.L. Chapter 149, Sections 30, 34, and 34A) This Paragraph 2.6 applies only to contracts which are subject to the provisions of the aforesaid sections of the Massachusetts General Laws.

No laborer, worker, mechanic, foreman or inspector working within this Commonwealth in the employ of the Contractor, Subcontractor or other person doing or contracting to do the whole or 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 extraordinary emergency.

2.7 Lodging, etc.: (Statutory reference: M.G.L. Chapter 149, Section 25) This paragraph 2.7 applies to every contract for the doing of public work with the Commonwealth, a county, city or town, or with a department, board, commission, or officer acting therefor.

Every employee under this contract shall lodge, board and trade where and with whom he elects, and neither the Contractor nor his agents or employees shall, either directly or indirectly, require as a condition of the employment of any person that the employee shall lodge, board or trade at a particular place or with a particular person.

2.8 Access to Contractor's Records: (Executive Order No. 195) This Paragraph 2.8 applies to every contract for the purchase of services or materials by any agency, bureau, board, commission, institution, or department of the Commonwealth or a municipal contract funded, in whole or in part, by the Commonwealth.

The Governor or his designee, the secretary of administration and finance, and the state auditor or his designee shall have the right at reasonable times and upon reasonable notice to examine the books, records and other compilations of data of the Contractor which pertain to the performance and requirements of this contract.

2.9 Worker's Compensation Insurance: (Statutory reference: M.G.L. chapter 149, Section 34) This Paragraph 2.9 applies to 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.

The Contractor shall, before commencing performance of the contract, provide by insurance for the payment of and the furnishing of other benefits under M.G.L. Chapter 152 to all persons to be employed under the contract, and the Contractor shall continue such insurance in full force and effect during the term of the contract. Sufficient proof of compliance with this Paragraph 2.9 must be furnished at the time of execution of this contract. 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 other party and to the awarding authority 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.

# ARTICLE 3 - CONTRACTOR'S ACCOUNTING METHOD REQUIREMENTS

- 3.1 (Statutory reference: M.G.L. Chapter 30, Section 39R) This Article 3 applies to "Contracts" and "Contractors", as defined in Subparagraph 3.1.1 and 3.1.2, below.
- 3.1.1 "Contractor" means any person, corporation, partnership, joint venture, sole proprietorship, or other entity awarded a contract pursuant to Sections 38A 1/2 to 38O, inclusive, of Chapter 7, Section 39M of Chapter 30, Sections 44A-44J, inclusive, of Chapter 149, or Section 11C of Chapter 25A which is for an amount or estimated amount that exceeds the dollar amount set forth in M.G.L. Chapter 30, Section 39R.
- 3.1.2 "Contract" means any contract awarded or executed pursuant to Sections 38A 1/2 to 38O, inclusive, of Chapter 7, Section 39M of Chapter 30, Sections 44A-44J, inclusive, of Chapter 149, or Section 11C of Chapter 25A which is for an amount or estimated amount that exceeds the dollar amount set forth in M.G.L. Chapter 30, Section 39R.

- 3.1.3 "Records" means books of original entry, accounts, checks, bank statements and all other banking documents, correspondence, memoranda, invoices, computer printouts, tapes, discs, papers and other documents or transcribed information of any type, whether expressed in ordinary or machine language.
- 3.1.4 "Independent Certified Public Accountant" means a person duly registered in good standing and entitled to practice as a certified public accountant under the laws of the place of his residence or principal office who is in fact independent. In determining whether an accountant is independent with respect to a particular person, appropriate consideration should be given to all relationships between the accountant and that person or any affiliate thereof. Determination of an accountant's independence shall not be confined to the relationships existing in connection with the filing of reports with the awarding authority.
- 3.1.5 "Audit", when used in regard to financial statements, means an examination of records by an independent certified public accountant in accordance with generally accepting accounting principles and auditing standards for the purpose of expressing a *certified* opinion thereon, or, in the alternative, a qualified opinion or a declination to express an opinion for stated reasons.
- 3.1.6 "Accountant's Report", when used in regard to financial statements, means a document in which an independent certified public accountant indicates the scope of the audit which he has made and sets his opinion regarding the financial statements taken as a whole with a listing of noted exceptions and qualifications, or an assertion to the effect that an overall opinion cannot be expressed. When an overall opinion cannot be expressed, the reasons therefor shall be stated. An accountant's report shall include as a part thereof a signed statement by the responsible corporate officer attesting that management has fully disclosed all material facts to the independent certified public accountant, and that the auditing financial statement is a true and complete statement of the financial condition of the Contractor.
- 3.1.7 "Management", when used herein, means the chief executive officers, partners, principals or other person or persons primarily responsible for the financial and operational policies and practices of the Contractor.
- 3.1.8 Accounting terms, unless-otherwise defined herein, shall have a meaning in accordance with generally accepted accounting principles and auditing standards.
- 3.2 Subparagraph 3.1.2 hereof notwithstanding, every agreement or contract awarded or executed pursuant to to Sections 38A 1/2 to 38O, inclusive, of Chapter 7, Section 39M of Chapter 30, Sections 44A-44J, inclusive, of Chapter 149, or Section 11C of Chapter 25A, shall provide that:
- 3.2.1 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

- 3.2.2 Until the expiration of six years after final payment, the awarding authority, 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 his Subcontractors that directly pertain to, and involve transactions relating to, the Contractor or his Subcontractors; and
- 3.2.3 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.
- 3.2.4 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 3.3 below prior to the execution of the contract.
- 3.2.5 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 3.5 below.
- 3.3 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:
- 3.3.1 transactions are executed in accordance with management's general and specific authorization:
- 3.3.2 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;
- 3.3.3 Access to assets is permitted only in accordance with management's general or specific authorization; and
- 3.3.4 The recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action was taken with respect to any difference.
- 3.4 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/she has examined the statement of management on internal accounting controls, and expressing an opinion as to:

- 3.4.1 Whether the representations of management in response to this paragraph and Paragraph 3.2 above are consistent with the result of management's evaluation of the system of internal accounting controls; and
- 3.4.2 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.
- 3.5 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.

#### ARTICLE 4 - MISCELLANEOUS

- 4.1 Weather Protection: This Paragraph 4.1 applies to every contract subject to M.G.L. Chapter 149, Section 44A.
- 4.1.1 The Contractor shall install weather protection and provide adequate heat in the protected area from November 1 to March 31, as required by M.G.L. Chapter 149 Section 44F(1).
- 4.2 Form for Sub-contract: This Paragraph 4.2 applies to every contract subject to M.G.L. Chapter 149 Section 44A.
- 4.2.1 The Contractor when sub-contracting with sub-bidders filed pursuant to M.G.L. Chapter 149, Section 44F shall use the form for sub-contract in Chapter 149 Section 44F(4)(c).
- 4.3 Foreign Corporations: This Paragraph 4.3 applies to every contract with the Commonwealth, a county, city, town, district, board, commission, or other public body for the construction, reconstruction, alteration, remodeling, repair, or demolition of any public building or other public works.
- 4.3.1 The Contractor, if a foreign corporation, shall comply with M.G.L. Chapter 30, Section 39L.
- 4.4 Shoring: (Statutory reference: M.G.L. Chapter 149, Section 129A). This Paragraph 4.4 applies to every construction project carried on by any city, town, county, or other subdivision of the Commonwealth in which a trench is to be dug to a depth of five feet or more, except a trench for laying of water pipes dug to a depth of six and one-half feet which will be open less than 48 hours, and except for digging of graves.
- 4.4.1 Such trenches shall be shored and braced in conformity with rules and regulations for the prevention of accidents in construction operations, as adopted and enforced by the Attorney General.

- 4.5 Certification of Compliance with Tax Laws: (Statutory reference: M.G.L. Chapter 62C, Section 49A) This Paragraph 4.5 applies to contracts for goods or services furnished by any department, board, commission, division, authority, district or other agency of the Commonwealth or any subdivision of the Commonwealth, including a city, town or district.
- 4.5.1 By executing this contract, the Contractor certifies, under penalties of perjury, that to the best of his information, knowledge and belief he has complied with all laws of the Commonwealth relating to taxes.
- 4.6 Verification of Construction Debris Disposal: (Worcester Revised Ordinances Chapter 8, Section 7) This paragraph 4.6 shall apply to every contract entered into by the City of Worcester for the demolition, renovation, rehabilitation, or alteration of a building or structure.
  - a. In furtherance of the requirements set forth in G.L. c.40, §54, and §114.1.3 of the State Building Code, the building commissioner shall require any person who obtains a permit for the demolition, renovation, rehabilitation, or alteration of a building or structure to provide verification that the debris resulting from such activities was disposed of at the licensed solid waste facility named in conjunction with the permit application.
  - b. The verification required under sub-section (a), above, shall consist of the following:
    - 1) a dated receipt, signed by the owner/operator of the licensed solid waste disposal facility where the debris was deposited.
    - 2) the receipt shall contain a description of the debris disposed of, and its weight, or volume.
    - the permit holder shall also provide the building commissioner with an affidavit that the receipt submitted is true and accurate to the best of the permit holder's knowledge.
    - 4) if the permit holder cannot dispose of the debris at the location indicated, it shall be the permit holder's obligation to obtain an amendment to the permit reflecting the new disposal location. The building commissioner shall be so notified, and the permit amended, prior to the disposal of the debris at the new disposal location.
  - c. This section shall not apply to the construction of a new building or structure.

- 4.7 Responsible Employer Ordinance: (Worcester Revised Ordinances, Chapter 2, Section 35) <u>This paragraph 4.7 shall apply to every contract entered into by the City of Worcester for the construction, reconstruction, installation, demolition, maintenance or repair of any **building**, where the contract amount is more than one hundred thousand dollars.</u>
- a. The city council hereby finds and determines that taxpayer money is most efficiently and productively spent by awarding construction contracts to firms that include and enforce provisions requiring compliance with state laws governing the payment of prevailing wages, the provision of workers compensation coverage, and the proper classification of individuals as employees and not as independent contractors, as well as provisions concerning health insurance coverage and state-certified apprenticeship programs. The city council hereby further finds and determines that it is appropriate for it to exercise its entrepreneurial discretion by requiring firms that are awarded such contracts to comply with this ordinance because failure to comply is injurious to the life, health, and happiness of individuals employed by such firms and is deleterious to the quality of life in the city where most of such individuals reside.
- b. Every contract awarded by the city under G.L. c.149 and G.L. 149A shall be deemed to incorporate by reference the provisions of sub-parts (c)(1) through (8) of together with the provisions of subsections (d) and (e) of this section. Any person, company or corporation shall acknowledge, in writing, receipt of said requirements with their bid or proposal.
- c. All bidders or proposers and all subcontractors and trade contractors, including subcontractors that are not subject to G.L. c.149, Section 44F, under the bidder for projects subject to G.L. c.149, Section 44A(2), and proposers under G.L. c. 149A, shall as a condition for bidding or subcontracting verify under oath and in writing at the time of bidding or subcontracting verify under oath and in writing at the time of budding or submittal in response to and RFP or in any event prior to entering into a subcontract at any tier, that they comply with the following conditions for bidding or subcontracting and, for the duration of the project, shall comply with the following obligations:
  - The bidder or proposer and all trade contractors and subcontractors under the bidder or proposer must comply with the obligations established under G.L. c. 149 to pay the appropriate lawful prevailing wage rates to their employees.
  - 2) The bidder or proposer and all trade contractors and subcontractors under the bidder or proposer must at a the time of bidding maintain or participate in a bona fide apprentice training program as defined by G.L. c.23, Sections 11H and 11I for each apprenticable trade or occupation represented in their workforce that is approved by the Division of Apprentice Standards of the Department of Labor and Workforce Development, regardless of whether or not the program qualifies as an employee welfare benefit plan under ERISA, and must register all apprentices with the Division and abide by the apprentice to journeyman ratio for each trade prescribed therein in the performance of any work on the project. This provision does not require the program to be an ERISA plan; the program need only have been approved by the Division of Apprentice Standards. All general bidders or

proposers and all trade contractors and sub-bidders at every tier must submit with its bid or proposal an original, stamped Sponsor Verification letter from the Commonwealth of Massachusetts, Department of Labor and Workforce Development – Division Apprentice Standards, issued within the past 90 days, evidencing that at the time of submitting a bid or proposal, the bidder or proposer is currently an Approved Sponsor of Apprentices. Any bid or proposal submitted without the above documentation shall be rejected; (Compliance with the apprentice training provision is currently suspended 7/24/14)

- 3) The bidder or proposer and all trade contractors and subcontractors under the bidder or proposer must maintain appropriate industrial accident insurance coverage for all the employees on the project in accordance with G.L. c. 152;
- 4) The bidder or proposer and all trade contractors and subcontractors under the bidder must properly classify employees as employees rather than independent contractors and treat them accordingly for purposes of workers' compensation insurance coverage, unemployment taxes, social security taxes and income tax withholding. (G.L. c.149, Section 148B on employee classification);
- 5) The bidder or proposer and all trade contractors and subcontractors under the bidder or proposer must at the time of bidding certify that, at the time employees begin work at the worksite, all employees 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, and shall ensure that all employees working at the worksite possess such qualifications at all times throughout the duration of their work on the project and furnish documentation of successful completion of the course;
- 6) The bidder or proposer and all trade contractors and subcontractors under the bidder or proposer must be in compliance with the health and hospitalization requirements of the Massachusetts Health Care Reform law established by Chapter 58 of the Acts of 2006, as amended, and regulations promulgated under that statute by the Commonwealth Health Insurance Connector Authority.
- 7) The bidder or proposer and all trade contractors and subcontractors under the bidder or proposer must make arrangements to ensure that each employee of every contractor entering or leaving the project individually completes the appropriate entries in a daily sign-in/out log. The sign-in/out log shall include: the location of the project; current date; printed employee name; signed employee name; and the time of each entry or exiting. The log shall contain a prominent

- notice that employees are entitled under state law to receive the prevailing wage rate for their work on the project. Such sign-in/out logs shall be provided to the City on a daily basis.
- 8) The bidder or proposer and all trade contractors and subcontractors under the bidder or proposer, prior to bidding or, if not subject to bidding requirements, prior to performing any work on the project, shall sign under oath and provide to the City a certification that they are not debarred or otherwise prevented from bidding for or performing work on a public project in the Commonwealth of Massachusetts or in the City.
- d. A proposal or bid submitted by any general bidder or by any trade contractor or subcontractor under the general bidder or proposer that does not comply with any of the foregoing conditions for bidding shall be rejected, and no subcontract for work outside the scope of G.L. c.149, Section 44F shall be awarded to a subcontractor that does not comply with the foregoing conditions.
- e. All bidders or proposers and all trade contractors and subcontractors under the bidder or proposer who are awarded or who otherwise obtain contracts on the projects subject to G.L. c.149, Section 44A(2) or c.149A, shall comply with each of the obligations set forth in this Section 4.7 for the entire duration of their work on the project, and an officer of each bidder or subcontractor under the bidder shall certify under oath and in writing on a weekly basis that they are in compliance with such obligations.
- f. Any proposer, bidder, trade contractor or subcontractor under the bidder or proposer who fails to comply with any one of the obligations set forth in this Section 4.7 for any period of time shall be, at the sole discretion of the City, subject to one or more of the following sanctions:
  - 1) cessation of work on the project until compliance is obtained;
  - 2) withholding of payment due under any contract or subcontract until compliance is obtained:
  - 3) permanent removal from any further work on the project;
  - 4) liquidated damages payable to the City in the amount of 5% of the dollar value of the contract.
- g. In addition to the sanctions outlined in subsection (h) above, a proposer, general bidder or contractor shall be equally liable for the violations of its subcontractor with the exception of violations arising from work performed pursuant to subcontracts that are subject to G.L. c.149, Section 44F. Any contractor or subcontractor that has been determined by the City or by any court or agency to have violated any of the obligations set forth in this Section 4.7 shall be barred from performing any work on any future projects for six months for a first violation, three years for a second violation and permanently for a third violation.

- 4.8 Regulation of Construction Noise: (Worcester Revised Ordinances, Chapter 8, Section 34) This paragraph 4.8 shall apply to anyone operating powered construction equipment delivering construction equipment and/or supplies at any construction site or project within the city of Worcester.
  - a. It shall be unlawful for any person, firm, corporation, partnership, or other entity to operate powered construction equipment or to build, erect, construct, demolish, alter, repair, excavate or engage in hoisting, grading, site work, including tree and brush removal, dredging or pneumatic hammering, or to deliver construction equipment and/or supplies to the site on any building, road, tower, parking lot, machine, pipe, sewer, sidewalk, or any other construction project (hereafter collectively the "construction project"), except between the hours of 7:00 a.m. and 9:00 p.m. on weekdays and Saturday, except for "emergency work" which is performed in the interest of public safety or welfare and for which a permit has been issued by the commissioner of public works and parks or the commissioner of inspectional services.

It shall be unlawful for any person, firm, corporation, partnership, or other entity to engage in a construction project activity on Sundays or legal holidays without a permit from the police chief issued pursuant to G.L. c. 136, Section 7 or 15 and a permit issued by the commissioner of inspectional services hereunder.

- b. Emergency work permits may be issued in:
  - 1) cases of urgent necessity and for the interests of health, safety and convenience of the public. The commissioner of inspectional services shall whether the reasons given for the urgent necessity are valid and reasonable, and whether the health, safety and convenience of the public will be protected or better served by granting the permit requested and whether the manner and amount of loss or inconvenience to the party in interest imposes a significant hardship; or,
  - 2) cases where, because the location and nature of the work, the noise caused by said work will not be heard by anyone not working on the project. The commissioner of inspectional services shall consider whether supplying machinery and/or materials to the construction project site will cause unreasonable noise along the routes to the construction project site, and whether such activity will impact residential neighborhoods, and shall not grant any emergency work permit unless unreasonable noise in residential areas will be prevented.
- c. Emergency work permits may be issued to the general contractor on a blanket basis that applies to all of the contractors working on the job, or may be issued to specific contractors on the construction project, at the discretion of the Commissioner.

Emergency work permits may be issued for not more than one week at a time, and may be renewed for additional one week periods at the discretion of the Commissioner.

- d. Prior to issuing or reissuing said emergency work permit, the commissioner of inspectional services shall review the work being conducted and all attendant circumstances, and shall prescribe whatever limitations possible to minimize the generation of noise, and to minimize the impact of noise on the neighbors to the construction project.
- e. Emergency repair work performed by the Department of Public Works and/or any public utility is exempt from this section.
- f. The fee for each such Emergency work permits issued under this section shall be set in accordance with Chapter 2, § 24 of the City of Worcester Revised Ordinances of 2008.
- g. On any project for the construction, reconstruction, installation, demolition, maintenance or repair of any building, or public work, to be funded in whole or in part by city funds, or funds which, in accordance with a federal or state grant, program, or otherwise, the city expends or administers, or any such project to which the city is a signatory to the contract therefor, the provisions of this section shall apply and the same shall be referred in every invitation to bid for such project and, the following paragraphs shall be contained in every resulting contract therefrom:

"It shall be a material breach of this contract if the contractor and each subcontractor shall not at all times adhere to the provisions of § 34 of chapter eight of the Revised Ordinances of the city, by limiting their on-site, noise producing construction and related work to the hours specified by the Ordinance.

A waiver from the above requirements may, in certain circumstances, be granted in accordance with subsections (b), (c) and (d) of § 34 of chapter eight of the Revised Ordinances of the city."

- h. The commissioner of inspectional services shall have the authority to adopt any rules and regulations he or she deems necessary to implement this section.
- i. Nothing in this section shall be deemed to prevent an individual from performing work on his or her own property, so long as the work is being done by the owner of the property or by direct relative(s) of the owner, and said work is not being done for profit.
- j. This section may be enforced by the commissioner of inspectional services, the building commissioner, the chief of police or their subordinates.

Any violation of this section by any person, firm, corporation, partnership, or other entity, shall be individually punished with a fine of \$100.00. Each day upon which a violation of this section occurs shall be considered a separate violation. Employers shall be deemed the violator for violations committed by their employees.

- 4.9 Regulation of Excessive and Unreasonable Noise: (Worcester Revised Ordinances, Chapter 9, Section 1A(e)(9) This paragraph 4.9 shall apply to anyone operating powered construction equipment delivering construction equipment and/or supplies at any construction site or project within the city of Worcester.
  - a. No person shall operate any powered construction equipment or build, erect, construct, demolish, alter, repair, excavate or engage in hoisting, grading, site work, including tree and brush removal, dredging or pneumatic hammering, or deliver construction equipment and/or supplies to the site on any building, road, tower, parking lot, machine, pipe, sewer, sidewalk, or any other construction project, except between the hours of 7:00 a.m. and 9:00 p.m. on weekdays and Saturday, and between the hours of 9:00 a.m. and 7:00 p.m. on Sundays, except for work performed by a public service or municipal utility department or "emergency work" performed with the express written permission of the commissioner of inspectional services or the commissioner of public works and parks. Emergency work shall be limited to such work that is clearly essential to respond to a sudden and unexpected threat to public health or public safety. Emergency work permission may be granted to a general or subcontractor on a blanket basis governing all persons working on a specified portion of a particular job. Emergency work permission may be granted for not more than one week at a time, and may be renewed for additional one week periods at the discretion of the commissioner who granted the initial permission.

# ARTICLE 104: GENERAL BID FORM

for

# Salisbury Street Culvert Replacement (S25-4) / DPW BID #: 8491-J6

BIDDER		
DIDDLIX	Print Name of the Firm or Proprietorship Submitting this Bid	

This bid must be accompanied by a deposit in the form of cash, or bid bond, or a certified check, treasurer's check, or cashier's check, payable to the City of Worcester (hereinafter referred to as the "Owner", or the "Awarding Authority") in the amount of five percent (5%) of the total value of the bid. No other form of bid security will be accepted.

By submitting this bid the Bidder represents that it has carefully examined the site of work described herein; has become thoroughly familiar with local conditions and the character and extent of the work; has carefully examined the Drawings, Project Manual and Contract Documents including all Addenda which are a part of this proposal, the General Bid Form, and thoroughly understands their stipulations, requirements, and provisions, and that the Bidder will contract, in the form of contract required, to provide all necessary and proper machinery, equipment, facilities, and means to do all the work and furnish all the materials necessary and proper to carry out such contract in the manner and on the conditions set forth therein in accordance with the Contract Documents, and to perform or observe all other contract requirements thereby. By submitting this bid, the Bidder further represents that it agrees to be subject to the jurisdiction of the courts of the Commonwealth of Massachusetts with respect to any actions arising out of or related to this bid or any contract that may be entered into based upon this bid, and that any such actions commenced by the Bidder shall be commenced in the courts of the Commonwealth of Massachusetts.

A bidder wishing to amend this bid after transmittal to the Owner may do so only by withdrawing this bid and resubmitting another bid prior to the time for opening bids.

#### TO THE AWARDING AUTHORITY:

**A.** The undersigned Bidder proposes to furnish all labor, materials, and equipment necessary and required for the project described herein in Worcester, MA, in accordance with the accompanying plans and specifications for the contract price specified below, subject to additions or deductions according to the terms of the Contract Documents.

В.	This Bid includes Addenda numbered:
C.	The proposed total base Bid price is:
	\$
	(TOTAL BASE BID WRITTEN IN WORDS)

# D. BID ALTERNATES: N/A

The owner may select at its option, any Alternate or combination of Alternates, or none of the Alternates. The Bidder is required to provide a bid for each Alternate listed below. If selected by the Owner, the Alternate(s) will be added to the total Base Bid price to determine the low bidder.

# E. UNIT PRICES: See Unit Pricing / Proposal Pages

In addition to stating the Total Base Bid Price, the Bidder shall state prices for the various items of work as may be listed herein. The Unit Prices listed below, if accepted by the Owner in the award of the contract, may be used for computing adjustments during the course of construction, based upon extra work ordered by the Owner, or for work countermanded, reduced, or omitted by the Owner.

#### F. TIME FOR COMPLETION

Work shall be completed within three hundred (300) calendar days from the issuance of notice to proceed. **G.** The Bidder agrees that if it is selected as the lowest responsible and eligible bidder, the Bidder will within five (5) days, Saturdays, Sundays and legal holidays excluded, after presentation thereof by the awarding authority, execute a contract in accordance with the terms of this bid and furnish a performance bond and also a labor and materials (a.k.a., payment) bond, each of a surety company qualified to do business under the laws of the Commonwealth of Massachusetts and satisfactory to the awarding authority and each in the sum of the contract price, the premiums for which are to be paid by the Bidder and are included in the bid price(s) contained herein.

The Bidder hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work; 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: and that he will comply fully with all laws and regulations applicable to awards of subcontracts subject to section 44F.

The undersigned further certifies under penalties of perjury that this bid is in all respects bona-fide, fair and made without collusion or fraud with any other person. As used herein the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity. The undersigned further certifies under penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth under the provisions of section 29F of Chapter 29 or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder.

Date:	<del></del>
	(Print Name of Bidder)
Signature:	By:
	(Name of Person Signing Bid and Title)
	(Business Address)
	(City, State and Zip Code)
Fax: ()	Phone: ()
Social Security Number or Federal Identification Number:	
E-Mail Address:	
full names and addresses	ration, indicate state of incorporation; if a partnership, give of all partners; and if a sole proprietorship, give residential usiness address. Use the following spaces:
If a Corporation:	
Incorporated in wha	at state:
President:	
Treasurer:	
Secretary:	· · · · · · · · · · · · · · · · · · ·
Commonwealth of Mass	corporated or organized under laws other than laws of the sachusetts), is the corporation registered with the of State's office? Yes No

If the Bidder is a foreign corporation, it is required under M.G.L. c. 30, section 39L to furnish to the awarding authority a certificate of the Secretary of State stating that the corporation has complied with M.G.L. c. 156D, Part 15, subdivision A, s. 15.03, and Part 16, subdivision B, s. 16.22.

If a Partnership: (Na	me all Partners)
Name of Partner:	
Residence:	
Name of Partner:	
Residence:	
Name of Partner:	
Residence:	
If an Individual:	
Name:	
Residence:	
If an Individual doing	business under a firm name:
Name of Firm:	
Name of Individual:	
Business Address:	
Residential Address	
(if different from abov	/e)

Other form of business organization:
<del></del>
SURETY INFORMATION:
The bidder will give below the name and address and State of Incorporation the surety company who will sign the bonds. Performance and Paymer Bonds in the amount of 100% of the dollar value of the contract will be require at time of contract execution.
It is contractor's responsibility to submit the required bond documentation in a form satisfactory to the City.
STATEMENT OF BIDDER'S QUALIFICATIONS  The bidder is requested to state below what work of a similar character to the included in the proposed contract he/she has done and to give references the will enable the Owner to judge his/her experience, skill, business standing ar overall responsibility. Supplemental forms may be used by the bidder.

END OF GENERAL BID FORM

#### ARTICLE 105: OWNER-CONTRACTOR AGREEMENT

THIS AGREEMENT made on	at Worcester, in the County of Worcester and
Commonwealth of Massachusetts, by and bety	ween (hereinafter called the Contractor), and
the City of Worcester, a municipal corporation	n within said County of Worcester, (hereinafter
called the City).	

#### WITNESSETH:

That the Contractor, in consideration of the payments hereinafter mentioned, and of the fulfillment of the agreements herein mutually entered into, agrees with the City as follows:

#### SCOPE OF WORK:

(1) The Contractor shall, pursuant to the terms of this AGREEMENT, provide all the supplies, materials, and equipment, and perform all the labor, services and supervision necessary and proper for (hereinafter called the "Project") in the City of Worcester, Massachusetts, and to accomplish any and all work incidental thereto.

#### **BONDS:**

(2)	The Contractor shall	obtain and deposit	with the City the to	ollowing bond(s) ir	n the amount of
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PERFORMANCE BOND:	(\$	)
	•	
PAYMENT BOND:	(\$	)

with sureties satisfactory to the Contracting Officer to (a) guarantee the faithful performance by the Contractor of all its obligations under this AGREEMENT and (b) constitute the security required by Massachusetts General Laws Chapter 149, Section 29, and Chapter 30, Section 39A, as amended, for the payment by the Contractor and its subcontractors for all labor performed or furnished and for all materials used or employed in connection with this AGREEMENT.

# **CONTRACTING OFFICER:**

(3) Wherever used in this AGREEMENT, the term "Contracting Officer" shall mean the City Official(s) so designated below, or the individual duly appointed by him/her for the performance of any of his/her functions or responsibilities under this AGREEMENT. The work performed hereunder shall be carried out under the direction and subject to the approval and acceptance of \_\_\_\_\_(hereinafter called the Contracting Officer).

# **INCORPORATED DOCUMENTS:**

- (4) The performance of this AGREEMENT is subject to the provisions of the following documents, all of which are attached hereto and intended to be an integral part of this AGREEMENT (hereinafter collectively referred to as "the Contract Documents").
  - a. Information to Bidders
  - b. Bid Proposal
  - c. Specifications, Drawings and Addenda

The Contract Documents are to be read collectively and complementary to one another; any requirement under one shall be as binding as if required by all. In the event of any conflict or inconsistency between the provisions of this AGREEMENT and any of the other Contract Documents, the provisions of this AGREEMENT shall prevail. In the event of any conflict or inconsistency between this AGREEMENT, the Contract Documents and any applicable state law, the applicable statutory provisions shall prevail.

#### TIME FOR PERFORMANCE:

(5) Time is of the essence for this AGREEMENT. The substantially completed		REEMENT mus	t be
PRICE:			
(6) The City will pay the Contractor for all materials deli- performed pursuant to Article (1) hereof a sum of money		and for all the v	vork
	(\$	<u>).</u>	

# PAYMENT:

- (7) Payment shall be made by the City in accordance with General Laws Chapter 30, Section 39G (1988 ed.), as amended, which is included in the Supplementary General Conditions to the Contract.
- (a) In addition to the retainage provided for in the above statutory provisions, the City may also, with the written consent of the Contractor, use any of the sums payable under this contract to pay for labor, materials, and for the rental of equipment that has been furnished to the Contractor or any of its subcontractors in connection with work under this contract, regardless of whether claims for such obligations have been filed with the City under General Laws Chapter 149, Section 29 or Chapter 30, Section 39A.
- (b) The payment shall be in full for furnishing all materials, supplies, labor services, supervision, tools and equipment and the use thereof as embraced under the AGREEMENT and shall also constitute the payment for all loss or damage to the Contractor arising out of the nature of the work or from the action of the elements or from any unforeseen difficulties or obstructions which may arise or be encountered during the prosecution of the work until its final approval by the Contracting Officer, and for all risks to the Contractor of every description

connected with the prosecution of the work or infringement of patents, trademarks, or copyrights and for completing the work in an acceptable manner.

- (c) The payment of any periodic estimate or of any retained percentage shall in no way constitute an acceptance of the work or in no way prejudice or affect the obligation of the Contractor at his own cost or expense to repair, correct, renew, or replace any defects or imperfections in the construction as well as all damages due or attributable to such defects, nor shall any such payment for any current estimate or of any retained percentages prejudice or affect the rights of the City to hold the Contractor liable for breach of contract or to avail itself of the remedies under Article 15, hereof.
- (d) If at any time there shall be evidence of any lien or other claim for which, if established, the City may become liable, directly or indirectly, and which is chargeable to the Contractor, the City may retain out of any payment then due or thereafter to become due an amount sufficient to completely indemnify it against any such claim. If there prove to be any such claim after all the payments are made, the Contractor shall refund to the City all moneys that the City pays in discharging such claim in consequence of the Contractor's default.
- (e) The Contractor, and each subcontractor, at every tier, represents, warrants and certifies that it has complied with all laws of the Commonwealth of Massachusetts relating to taxes and all Ordinances and Orders of the City of Worcester relating to taxes, fees and charges, or is lawfully contesting the validity of the same. The Contractor, and each subcontractor, at every tier, further represents, warrants and certifies that it will remain in such compliance during the term of this Agreement, including any amendments or extensions hereto. Breach of any of these provisions shall be deemed a material breach which shall entitle the City to immediately terminate this Agreement and take any other action authorized by law to collect any amounts due the City.

#### PAYMENT OF SUBCONTRACTORS

(8) Payment to subcontractors shall be made in accordance with General Laws Chapter 30, Section 39F (1988 ed.), as amended, which is included in the Supplementary General Conditions.

# NOTICE:

(9) Wherever in this AGREEMENT the City is to give or receive a notice, the Contracting Officer as defined in Article (3) shall be the City's agent for such purpose.

#### PERFORMANCE:

(10) (a) The Contractor shall give his personal attention constantly to the faithful prosecution of the work and shall keep the same under his personal control. He shall not assign by power of attorney or otherwise the work or any part thereof without the previous written consent of the Contracting Officer. He shall not either legally or equitably assign any of the moneys payable under this contract or any claim thereto unless by and with like consent on the part of the Contracting Officer and the City Treasurer. He shall be responsible for all the acts and omissions

of his employees and of all persons directly or indirectly employed by him in connection with the prosecution of this work.

- (b) The Contractor shall provide sufficient and proper facilities at all times for the inspection of the work by the City. He shall, after receiving written notice that certain work or construction is improper, unsafe or defective or that such construction in any way fails to conform to the contract documents, forthwith remove such unsafe or defective construction and reconstruct the same in a manner satisfactory to the Contracting Officer. Upon failure of the Contractor to remedy the construction after being so notified, the Contracting Officer may cause such defective work to be remedied or replaced and the City may deduct the cost thereof from any moneys due or to become due the Contractor.
- (c) The City, acting through the Contracting Officer, shall have the authority to suspend the work wholly, or in part thereof, for such period as he shall deem necessary, due to failure of the Contractor to carry out orders given or to perform any provision of the contract. Upon receipt of written order from the Contracting Officer, the Contractor shall immediately suspend the work or such part thereof in accordance with the order. No work shall be suspended without the written permission of the Contracting Officer. The work shall be resumed when conditions so warrant, or deficiencies have been corrected and the condition of the contract satisfied as ordered or approved in writing by the Contracting Officer. No allowance of any kind will be made for suspension of work by order of the Contracting Officer pursuant to this paragraph.
- (d) If, during the process of the work, the Contractor or the City 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 City may request an equitable adjustment in the price of the AGREEMENT 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 the Contractor, or upon its own initiative, the City 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 work, the City shall make an equitable adjustment in the contract price and the AGREEMENT shall be modified in writing accordingly. (G. L. c. 30, s.39N, as amended, which is included in the Supplementary General Conditions).
- (e) The Contractor agrees that it will have no claim for damages of any kind on account of any delay in commencement of the Work, or any delay or suspension of any portion thereof, except as hereinafter provided. Post commencement, the Contractor shall have no claim for damages of any kind on account of any delay or suspension of any portion of the work except as hereinafter provided. Adjustments, if any, in the contract price due to a suspension, delay, interruption or failure to act by the City shall be governed by the provisions of General Laws Chapter 30, section 39(O), as amended, which is included in the Supplementary Conditions. Provided, however, the provisions of this paragraph shall not apply to any suspension pursuant

to paragraph 10(c), or for any suspension, delay, interruption or failure to act to the extent that such is due to any cause for which this AGREEMENT provides for an equitable adjustment of the contract price, or time under any other AGREEMENT provision. Provided further, that no adjustment shall be made if the performance of the Contractor would have been prevented by other causes, even if the work had not been so suspended, delayed or interrupted by the City. Provided further, that a subcontractor shall have the same rights against the Contractor for payment for an increase in the cost of his performance as the provisions of this paragraph gives the Contractor against the City, but nothing herein shall in any way change, modify or alter any other rights which the Contractor and subcontractor may have against each other.

- (f) The Contractor must submit the amount of a claim under provision (e) to the City in writing as soon as practicable after the end of the suspension, delay or interruption or failure to act and, in any event, not later than the date of final payment under this AGREEMENT and, except for costs due to a suspension order, the City shall not approve any costs in the claim incurred more than twenty days before the Contractor notified the City in writing of the act or failure to act involved in the claim.
- (g) The City may award other contracts for additional work. The Contractor shall cooperate fully with other contractors and carefully fit his own work to that of other contracts as may be directed by the Contracting Officer. The Contractor shall not commit or permit any act that will interfere with the performance of work by any other contractor.
- (h) The Contractor shall comply with all the laws, state and federal, applicable to the work and construction herein provided for. This AGREEMENT is made subject to all laws, state and federal; and if any clause hereof does not conform to such law, then such clause shall be void and the operative state or federal law shall be inserted in lieu thereof. Any violation by the Contractor of state or federal laws relating to the employment of labor upon the work or the construction contemplated by this AGREEMENT shall be a sufficient cause for the City to cancel the AGREEMENT without in any way being liable in damages therefor. Should the City cancel the AGREEMENT because of the failure on the part of the Contractor to observe the state or federal laws, or the rules and regulations relating to employment and labor upon the work herein contemplated, then upon cancellation the City reserves all rights and benefits herein or by law provided against the Contractor for the breach of the conditions of this AGREEMENT.
- (i) When the use of explosives is necessary for the prosecution of the work, the Contractor shall take the utmost care not to endanger life and property. Whenever directed, the number and size of the charges shall be reduced. All explosives shall be stored in a secure manner. All such storage places shall be marked clearly "DANGEROUS EXPLOSIVES", and shall be in the care of competent watchmen at all times. The method of storage and handling explosives and highly inflammable materials shall conform to all the State laws and regulations, as well as any local requirements.
- (j) Upon the completion of the work, the Contractor shall at his own expense remove all equipment, temporary Contractor's buildings and sheds, fencing, rubbish and waste material in and about the area that has been worked and he shall leave the premises and the work performed all in a neat and proper condition.

- (k) Before commencing the work, the Contractor shall, if required, submit a schedule of operations for approval by the Contracting Officer. The schedule shall show the methods and order of operations that the Contractor proposes to use. The approval of the schedule by the Contracting Officer shall not be construed as relieving the Contractor from any responsibility.
- (I) Should the Contractor be obstructed or delayed in the prosecution of the work by any act or neglect on the part of the City, or as a result of damage which may be caused by lightning, earthquake, rain, storm, or cyclone, then the time fixed for completion may be extended for a period equivalent to the time lost by reason of any of the foregoing causes. No such extension shall be made unless a claim therefor is presented in writing to the Contracting Officer within forty-eight hours of the occurrence of such delay. The Contractor shall have no claim against the City for damages on account of such delay. The duration of the extension itself must be certified to by the Contracting Officer.

#### ADDITIONAL WORK:

- (11) (a) The Contractor agrees to perform any work related to the subject matter of the AGREEMENT, but not within the scope of the AGREEMENT and its specifications, upon the written order of the Contracting Officer, the payment for such extra work to be made in accordance with one of the methods set forth in Article 12 of the General Conditions of the Contract for Construction.
- (b) The Contracting Officer may make alterations in the line, grade, plan, form, dimensions, or materials of the subject matter of the contract, or any part thereof either before or after commencement of construction. Where such alterations increase the quantity or standard of the work to be done, payment for such increase shall be made in the same way that payment is made for such extra work under (a), above. Where such alterations diminish the quantity or standard of the work to be done, an adjustment shall be made to the benefit of the City based upon the unit prices where used, or where unit prices are not used, as the Contracting Officer shall determine.

#### EMPLOYMENT:

- (12) (a) The Contractor shall employ competent workers, and if notified by the Contracting Officer in writing that any person engaged upon the work is incompetent, unfaithful, disorderly or otherwise unsatisfactory, then such worker shall be discharged from the work.
- (b) In the employment of persons, including mechanics, teamsters, chauffeurs and laborers, under this contract, preference shall be given
- First: To citizens of the Commonwealth who are residents of the City of Worcester and who have served in the Army or Navy of the United States in time of war and have been honorably discharged therefrom or released from active duty therein, and who are qualified to perform the work to which the employment relates.

Second: To citizens of the Commonwealth who are residents of Worcester and are qualified to perform the work to which the employment relates.

Third: To citizens of the Commonwealth who have served in the Army or Navy of the United States in time of war and have been honorably discharged therefrom or released from active duty therein and who are qualified to perform the work to which the employment relates.

Fourth: To citizens of the Commonwealth generally.

Fifth: To citizens of the United States.

The foregoing provisions shall not apply to those persons employed in a supervisory capacity. In so far as practicable preference is to be given Worcester Truckers in hauling materials.

- (c) No laborer, worker, mechanic, foreman, or inspector working within the Commonwealth of Massachusetts in the employ of the Contractor, sub-contractors, or other persons doing or contracting to do the whole or part of the work contemplated by this AGREEMENT, shall be required or permitted to work more than eight hours in any one calendar day; or more than 48 hours in one week, or more than 6 days in any one week in full compliance with provisions of G. L. c. 149, sec. 34, except in cases of emergency.
- (d) Every employee in the work covered by this AGREEMENT shall lodge, board and trade where and with whom he elects and neither the Contractor nor his agents or employees shall directly or indirectly require as a condition of employment therein that an employee shall lodge, board or trade at a particular place or with a particular person.
- (e) The Contractor shall provide and maintain in a neat and sanitary condition such accommodations for the use of his employees as may be necessary to comply with the requirements of the Department of Public Health, local health officials or of other appropriate authorities. The maintenance of all sanitary facilities shall be subject to the laws of the Commonwealth and to the rules and regulations of the State Board of Health and of the Commissioner of Public Health for the City of Worcester.
- (f) The Contractor shall, before commencing the work, provide by insurance for the payment of compensation and the furnishing of other benefits under Chapter 152 of the General Laws (Ter. Ed.) to all persons employed under the AGREEMENT, and he shall continue such insurance in force and effect during the term thereof. The City may require the Contractor to deliver certificates of insurance as sufficient proof of compliance with the foregoing. Failure to provide and continue in force such insurance as aforesaid shall be deemed a material breach of the AGREEMENT and shall entitle the City to terminate the AGREEMENT without in any way being liable in damages therefor.
- (g) The Contractor shall keep a true and accurate register of all mechanics, teamsters, chauffeurs and laborers employed upon the work contemplated by this AGREEMENT, showing the name, address and occupational classification of each such employee, the hours worked by and the wages paid to each such employee, and shall furnish the Massachusetts Attorney General's office, or such other appropriate state official upon request a true statement thereof.

(h) Minimum wage rates under the provisions of General Laws c. 149, section 27, as amended, have been determined by the state Department of Labor and Workforce Development, and the Contractor shall in the payment of wages be bound by them during the life of the AGREEMENT. The applicable schedule of minimum wage rates, as so determined, is incorporated elsewhere within the Contract Documents.

#### **TERMINATION:**

- (13) (a) If the Contractor shall be adjudged a bankrupt, or if he shall make a general assignment for the benefit of his creditors, or if a receiver of his property shall be appointed, or if the work to be done under the AGREEMENT shall be abandoned, or if the AGREEMENT or any part thereof shall be sublet without the previous written consent of the Contracting Officer, or if the AGREEMENT or any claim thereunder shall be assigned by the Contractor otherwise than as herein specified, or if at any time the Contracting Officer shall be of the opinion that the work, or any part thereof, is unnecessarily or unreasonably delayed, or that the Contractor has violated any of the provisions of the AGREEMENT, the Contracting Officer, for and in behalf of the City, may notify the Contractor to discontinue all work, or any part thereof; and thereupon the Contractor shall discontinue such work or such part thereof as the Contracting Officer may designate, remove his equipment, tools, supplies and materials as the Contracting Officer directs, and the City may thereupon, by contract or otherwise, as it may determine, complete the work, or such part thereof, and charge the entire expense of so completing the work or any part thereof to the Contractor.
- (b) If the Contracting Officer shall certify by written notice to the Contractor that the rate of progress is not satisfactory, the City may, instead of notifying the Contractor to discontinue all of the work or any part thereof, notify him from time to time to increase the force, equipment and plant, or any of them, employed on the whole or any part of the work, stating the amount of increase required. Unless the Contractor shall, within five days after such notice, increase his force, equipment and plant to the extent required therein, and maintain and employ the same from day to day until the completion of the work or such part thereof, or until the conditions of the work or such part thereof, or until the conditions as to the rate of progress shall, in the opinion of the Contracting Officer, be fulfilled, the City may employ and direct the labors of such additional force, equipment and plant as may, in the opinion of the Contracting Officer, be necessary to insure the completion of the work or such part thereof within the time specified or at the earliest possible date thereafter, and charge the expense thereof to the Contractor. Neither the notice from the Contracting Officer to the Contractor to increase his force, equipment or plant nor the employment of additional force, equipment or plant by the City shall be held to prevent a subsequent notice to the Contractor from the City to discontinue the work under the provisions of the preceding portion of this Article.
- (c) All expenses charged under this Article shall be deducted by the City out of moneys then due or to become due the Contractor under this AGREEMENT, or any part thereof. In such accounting, the City shall not be obligated to obtain the lowest figures for the work of completing the AGREEMENT or any part thereof, or for insuring its proper completion, and all sums actually paid by the City shall be charged to the Contractor. If the expense so charged is greater than the sum which would have been payable under the AGREEMENT, if the same had been

completed by the Contractor, then the Contractor shall pay the amount of the excess to the City upon completion of the work and without further demand being made therefor.

(d) The Contractor shall not be relieved of liability to the City by virtue of any termination of this AGREEMENT and any claim for damages against the Contractor relating to the Contractor's performance under this AGREEMENT shall survive any termination hereunder.

#### **GUARANTEES:**

- (14) (a) The Contractor guarantees the work under this AGREEMENT and the materials furnished by him for use in connection therewith to be free from defects or flaws for one year after the completion of the AGREEMENT. It is expressly understood, however, that this guarantee provision shall not absolve the Contractor from any liability to the City arising out of a failure to substantially comply with the terms of the AGREEMENT.
- (b) If at any time within said guaranty period, any part of the work constructed under the terms of this AGREEMENT shall in the opinion of the Contracting Officer require repairing due to defective work or materials furnished by the Contractor he may notify the Contractor in writing to make the required repairs. If the Contractor shall neglect to start such repairs within ten days of the date of giving him notice thereof and to complete the same to the satisfaction of the Contracting Officer with reasonable dispatch, then the latter may employ other persons to make such repairs. The City shall charge the expense thereof to the Contractor and may use any moneys still retained to pay for the same, and if such sum is insufficient, the Contractor shall be obligated to pay the balance thereof.

#### INDEMNIFICATION:

- (15) (a) The Contractor shall indemnify and save harmless the City of Worcester and all of its officers, agents and employees against all suits, claims or liability of every name, nature, and description arising out of or in consequence of the acts or omissions of this AGREEMENT in the performance of the work covered by the contract and/or his failure to comply with the terms and conditions hereof; and will at his own cost and expense defend any and all such suits and actions.
- (b) The Contractor shall bear all losses resulting from the use or storage of explosives and highly inflammable materials and shall save the City harmless from all claims for bodily injuries or death to any person and from all claims for property damage or destruction arising out of the use or storage of explosives and highly inflammable materials.
- (c) The Contractor further covenants to hold and save the City, its officers, servants and employees harmless from and against all and every demand or demands, of any nature or kind for or on account of the use of any patented invention, article or appliance included in the materials and equipment agreed to be furnished, supplied or used under this AGREEMENT.

#### INSURANCE:

- (16) (a) The Contractor shall carry public liability insurance so as to save the City harmless from any and all claims for damages arising out of bodily injury to, or death of, any person or persons and for all claims for damages arising out of injury to or destruction of property caused by accidents resulting from the use of implements, equipment or labor used in the performance of the AGREEMENT or from any neglect, default, omission or want of proper care or misconduct on the part of the Contractor or of any one in his employ during the execution of the work. Such insurance shall include coverage for blasting and explosion if explosives are to be used.
- (b) The Contractor shall carry any other types of insurance as may be required elsewhere in the Contract Documents. All insurance policies required in the Contract Document shall be provided by companies satisfactory to the City.
- (c) Prior to starting work under this AGREEMENT the Contractor shall deposit with the City's Purchasing Division certificates from the insurers to the effect that the insurance policies required in the above paragraphs have been issued to the Contractor. The certificates must be on a form satisfactory to the City.
- (d) Unless greater amounts of insurance coverage are required elsewhere in the Contract Documents, the amounts of such public liability insurance shall not be less than the minimum amounts set forth below:
  - (i) Commercial General Liability \$1,000,000.00 per occurrence / \$ 2,000,000.00 aggregate.
  - (ii) Automotive Liability, for bodily injury & property damage combined single limit of, \$ 1,000,000.00 (all owned, hired and non-owned autos).
  - (iii) Excess / Umbrella Liability Per Occurrence / Aggregate \$ 1,000,000 / \$ 1,000,000
- (e) Unless greater amounts of insurance coverage are required elsewhere in the Contract Documents, the Contractor shall also carry bodily injury and property damage insurance in amounts not less than those set forth above covering the operation of all motor vehicles owned by the Contractor and engaged in this work.
- (f) No cancellation of any insurance whether by the insurer or by insured shall be effective unless written notice thereof is given to the City at least fifteen days prior to the intended effective date thereof, which date has been expressed in the notice. Prior to the effective date of any such cancellation the Contractor shall take out new insurance to cover the policies so canceled. The Insurance Companies shall remain liable, however, until new and satisfactory insurance policies have been delivered to and accepted by the City.

#### CONFLICT OF INTEREST

(17) (a) The Contractor warrants that he has complied with all provisions of law regarding the award of this AGREEMENT and that he, or his employees, agents, officers, directors or trustees

have not offered or attempted to offer anything of value to any employee of the City in connection with this AGREEMENT.

- (b) The Contractor further warrants that no elected official or employee of the City of Worcester, including unpaid members of the City boards and commissions, serves as an officer, director, trustee or employee of Contractor, and that no elected officials or employees of the City of Worcester have or will have a direct or indirect financial interest in this AGREEMENT.
- (c) Violation of this Article shall be material breach of this AGREEMENT and shall be grounds for immediate termination of this AGREEMENT by the City without regard to any enforcement activities undertaken or completed by any enforcement agency.
- (d) Termination of this AGREEMENT pursuant to this Article shall not waive any claims for damages that the City may have against the Contractor resulting from Contractor's violation of the terms of this Article.

# SEVERABILITY:

(18) If any provision of this AGREEMENT is held invalid by any court or body of competent jurisdiction, the remainder of this AGREEMENT shall remain in full force and effect.

#### **HEADINGS:**

(19) The section headings in this AGREEMENT are for convenience and reference only and in no way define or limit the scope or content of this AGREEMENT or in any way affect its provisions.

# **AMENDMENTS:**

(20) This AGREEMENT may be amended or modified only by written instrument duly executed by the parties.

#### **ENTIRE AGREEMENT:**

(21) This AGREEMENT contains the entire understanding of the parties and supersedes all prior agreements, representations, proposals and undertakings of the parties.

IN WITNESS WHEREOF, the Contractor has hereunto set his hand and seal, and the City has caused its corporate seal to be hereto affixed and this AGREEMENT to be executed in its name and behalf the day and year first above written.

CITY OF WORCESTER		(CONTRACTOR)
By: Christopher J. Gagliastro Purchasing Director	Ву:	(Seal)
APPROVED AS TO LEGAL FORM:		
Ву:		
CERTIFICATION OF FUNDING:  I certify that an appropriation of funds in the amount of this Agreement is contained in account number		
By: Robert V. Stearns City Auditor		
APPROVED:		
Dva.		
By: Eric D. Batista City Manager		

#### **ARTICLE 106: PAYMENT BOND**

KNOW ALL BY THESE PRESENTS, that a corporation duly
established by law and having a usual place of business at as PRINCIPAL, and
a corporation organized under the laws of the
(State/Commonwealth) of and duly authorized and admitted, unde
the provisions of Chapter 175 of the Massachusetts General Laws as amended
to transact the business of a fidelity and surety company in Massachusetts, as
SURETY, are held and firmly bound unto the City of Worcester, a municipa
corporation within the Commonwealth of Massachusetts, in the sum o
lawful money of the United States of America, to be paid to the City
of Worcester, its successors and assigns, to the payment of which, well and truly
to be made, the PRINCIPAL and the SURETY bind themselves, their heirs
executors, administrators, successors and assigns, jointly and severally, firmly by
these presents.
WHEREAS, the said PRINCIPAL has entered into an Agreement of even date
herewith with the City of Worcester, said Agreement being for the
in the city of Worcester. Massachusetts:

NOW THEREFORE, the condition of this obligation is such that if the <u>PRINCIPAL</u> shall pay for all labor performed or furnished and for all materials used or employed or any appliance and equipment used or employed or rented or hired out in the execution of said Agreement and in any and all duly authorized modifications, alterations, extensions of time, changes or additions to said Agreement that may hereafter be made, notice to the <u>SURETY</u> of such modifications, alterations, extensions of time, changes or additions being hereby waived, the foregoing to include any other purposes or items set out in, and to be subject to, the provisions of Massachusetts General Laws, Chapter 149, Section 29 and Chapter 30, Section 39A as amended, then this obligation shall become null and void; otherwise it shall remain in full force and virtue.

IN TESTIMONY WHEREOF, the <u>PRINCIPAL</u> has hereunto caused its name and seal to be affixed, and the <u>SURETY</u> has caused its corporate seal to be hereunto affixed by a duly authorized officer thereof and this instrument to be executed and delivered in its name and behalf by its attorney-in-fact, duly authorized by its by-laws and votes, powers of attorney, and letters of appointment and authorization, certificated copies of which documents are annexed to this bond and may be introduced in evidence as if a part hereof.

(Principal)		(Seal)
Ву: _		
(Surety)		(Seal)
BY: _	Attorney-in-Fact	

#### ARTICLE 107: PERFORMANCE BOND

KNOW ALL BY THESE PRESENTS, that	_ a corporation duly
established by law and having a usual place of business at	
, a corporation duly established under	the laws of the
(Commonwealth/State) of and duly authorized under the provisions of Chapter 175 of the Massachuset amended, to transact the business of a fidelity and Massachusetts, as <u>SURETY</u> , are held and firmly bound unto a municipal corporation within the Commonwealth of Massachusett of Lawful money of the United States of Asaid City of Worcester, its successors and assigns, to the parand truly to be made, the PRINCIPAL and said SURETY be	tts General Laws as surety company in the City of Worcester, achusetts, in the sum merica, to be paid to ayment of which, well
heirs, executors, administrators, successors and assigns, firmly by these presents.  Whereas the said PRINCIPAL has entered into an Agrehereof with the City of Worcester, said Agreement in the city of Worcester, Mass	eement of even date

NOW THEREFORE, the condition of this obligation is such that if the said <u>PRINCIPAL</u> shall well and faithfully perform all the terms and conditions of said Agreement on its part to be kept and performed as therein stipulated, including guarantee and maintenance provisions therein, and shall pay for all materials furnished and for all labor performed in the execution of said Agreement, and shall indemnify and save harmless the said City of Worcester as therein stipulated, then this obligation shall be of no effect; otherwise it shall remain in full force and virtue.

And the said <u>SURETY</u>, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of said Agreement, or to the work to be performed thereunder, or to the specifications accompanying the same, shall in any way effect its obligation on this bond; and it does hereby waive notice of any change, extension of time, alterations or additions to the terms of said Agreement, or to the work, or to the specifications.

In the event that the Agreement is abandoned by the Contractor, or is terminated by the City under the provisions thereof, said <u>SURETY</u> hereby further agrees that it shall, if requested in writing by the City, take such action as is necessary to complete said Agreement.

IN TESTIMONY WHEREOF, the <u>PRINCIPAL</u> has hereunto caused its name and seal to be affixed, and the said <u>SURETY</u> has caused its corporate seal to be hereunto affixed by a duly authorized officer thereof and this instrument to be executed and delivered in its name and behalf by its attorney-in-fact, duly authorized by its by-laws and votes, powers of attorney, and letters of appointment and authorization, certificated copies of which documents are annexed to this bond and may be introduced in evidence as if a part hereof.

(PRINCIPAL)	(SEAL)
Ву:	
(SURETY)	(SEAL)
By:Attorney-in-fac	<u> </u>

# **ARTICLE 108 - APPLICATIONS FOR PAYMENT**

# **PART 1 - GENERAL**

#### 1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, are hereby made a part of this Section.

#### 1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements governing the Contractor's Applications for Payment.
- 1. Coordinate the Schedule of Values and Applications for Payment with the Contractor's Construction Schedule, List of Subcontracts, and Submittal Schedule.
- B. The Contractor's Construction Schedule and Submittal Schedule are included in Section "Submittals".

#### 1.3 SCHEDULE OF VALUES

- A. Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.
- 1. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:
  - a. Contractor's construction schedule.
  - b. Application for Payment form.
  - c. List of subcontractors.
  - d. Schedule of allowances, if any.
  - e. Schedule of alternates, if any.
  - f. List products.
  - g. List of principal suppliers and fabricators.
  - h. Schedule of submittals.
- 2. Submit the Schedule of Values to the Architect at the earliest feasible date, but in no case later than seven (7) days before the date scheduled for submittal of the initial Application for Payment.
- 3. Sub-Schedules: Where the Work is separated into phases that require separately phased payments, provide sub-schedules showing values correlated with each phase of payment.

- B. Format and Content: Use the Project Manual Table of Contents as a guide to establish the format for the Schedule of Values. Coordinate with the Clerk of the Works for exact breakdown of major categories of work.
- 1. Identification: Include the following Project identification on the Schedule of Values:
  - a. Project name and location.
  - b. Name of the Architect.
  - c. Proiect number.
  - d. Contractor's name and address.
  - e. Date of submittal.
- 2. Arrange the Schedule of Values in a tabular form with separate columns to indicate the following for each item listed:
  - a. Generic name.
  - b. Related Specification Section.
  - c. Name of subcontractor.
  - d. Name of manufacturer or fabricator.
  - e. Name of supplier.
  - f. Change Orders (numbers) that have affected value.
  - g. Dollar value to nearest dollar.
  - h. Percentage of Contract Sum to the nearest percent, adjusted to total 100 percent
- 3. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Break principal subcontract amounts down into several line items.
- 4. Round amounts off to the nearest whole dollar; the total shall equal the Contract Sum.
- 5. For each part of the Work where an Application for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed, provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
- 6. Margins of Cost: Show line items for indirect costs, and margins on actual costs, only to the extent that such items will be listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete including its total cost and proportionate share of general overhead and profit margin.

- a. At the Contractor's option, temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown as separate line items in the Schedule of Values or distributed as general overhead expense.
- 7. Schedule Updating: Update and resubmit the Schedule of Values when Change Orders result in a change in the Contract Sum.

#### 1.4 APPLICATIONS FOR PAYMENT:

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect and paid for by the Owner.
- 1. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.
- B. Payment Application Times: Each progress payment date is as indicated in the Agreement. The period of construction Work covered by each Application or Payment is the period indicated in the Agreement.
- C. Payment Application Forms: Use AIA Document G 702 and Continuation Sheets G 703 as the form for Application for Payment. No exceptions will be made.
- D. Application Preparation: Complete every entry on the form, including notarization and execution by person authorized to sign legal documents on behalf of the Contractor. Incomplete applications will be returned without action.
- 1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions have been made.
- 2. Include amounts of Change Orders issued prior to the last day of the construction period covered by the application.
- E. Transmittal: Submit six (6) executed copies of each Application for Payment to the Architect by means ensuring receipt within twenty-four (24) hours; one (1) copy shall be complete, including proof of payments (see, 1.4F) and similar attachments, when required.
- 1. Transmit each copy with a transmittal form listing attachments, and recording appropriate information related to the application in a manner acceptable to the Architect.
- 2. With each requisition, after the first requisition, submit one (1) copy of up-dated as-built drawings for all underground and concealed work, showing locations, depths, or elevations.

- F. Proof of Payments: With each Application for Payment, submit proof of payment to every subcontractor and supplier, at each tier, entitled to payment under the previous requisition and periodic payment made by the Owner to the Contractor on behalf of all such entities.
- 1. Submit partial waivers on each item for the amount requested, prior to deduction for retainage, on each item.
- 2. When an application shows completion of an item, submit final or full waivers or proof of payments.
- 3. Proof of Payment Delays: Submit each Application for Payment with the Contractor's proof of payment for the period of construction covered by the Application or it may be returned as incomplete.
- a. Submit final Application for Payment with or preceded by final proof of payment for every entity involved with performance of Work covered by the application who could lawfully be entitled to file for direct payment under M.G.L. c. 30, s. 39F, and/or against the Contractor's Labor and Materials Payment Bond.
  - 4. Submit proof of payment in a manner acceptable to Owner.

- G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include the following:
  - 1. List of subcontractors.
  - 2. List of principal suppliers and fabricators.
  - Schedule of Values.
  - 4. Contractor's Construction Schedule (preliminary, if not final).
  - 5. Schedule of principal products.
  - 6. Submittal Schedule (preliminary, if not final).
  - 7. List of Contractor's staff assignments.
  - 8. List of Contractor's principal consultants.
  - 9. Copies of building permits.
  - 10. Copies of authorizations and licenses from governing authorities for performance of the Work.
  - 11. Initial progress report.
  - 12. Report of pre-construction meeting.
  - 13. Certificates of insurance and insurance policies.
  - 14. Performance and payment bonds (if required).
  - 15. Data needed to acquire Owner's insurance.
  - 16. Initial settlement survey and damage report, if required.
- H. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment; this application shall reflect any Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- I. Administrative actions and submittals that shall proceed or coincide with Application for Payment at Substantial Completion include:
  - 1. Occupancy permits and similar approvals.
  - 2. Warranties (guarantees) and maintenance agreements.
  - 3. Test/adjust/balance records.
  - 4. Maintenance instructions.
  - Meter readings.
  - 6. Start-up performance reports.
  - 7. Change over information related to Owner's occupancy, use, operation and maintenance.
  - 8. Final cleaning.
  - 9. Application for reduction of retainage, and consent of surety.
  - 10. Advice on shifting insurance coverages.
  - 11. Final progress photographs.
  - 12. List of incomplete Work, recognized as exceptions to Architect's Certificate of Substantial Completion.

- J. Final Payment Application: Administrative actions and submittals that must precede or coincide with submittal of the final payment Application for Payment include the following:
  - 1. Completion of Project closeout requirements.
- 2. Completion of items specified for completion after Substantial Completion.
  - 3. Assurance that unsettled claims will be settled.
- 4. Assurance that Work not complete and accepted will be completed without undue delay.
  - 5. Transmittal of required Project construction records to Owner.
  - 6. Certified property survey.
  - 7. Proof that taxes, fees and similar obligations have been paid.
  - 8. Removal of temporary facilities and services.
  - 9. Removal of surplus materials, rubbish and similar elements.
  - 10. Change of door locks to Owner's access.

# **ARTICLE 109 - MODIFICATION PROCEDURES**

# **PART 1 - GENERAL**

# 1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, are hereby made a part of this Section.

# 1.2 SUMMARY

- A. This section specifies administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Sections: The following sections contain requirements that relate to this section:
- 1. Division 1 Section "Submittals" for requirements for the Contractor's Construction Schedule.
- 2. Division 1 Section "Application for Payment" for administrative procedures governing applications for payment.
- 3. Division 1 Section "Product Substitutions" for administrative procedures for handling requests for substitutions made after award of the Contract.

## 1.3 MINOR CHANGES IN THE WORK

A. Supplemental instructions authorizing minor changes in the Work, not involving an adjustment to the Contract Sum or Contract Time, will be issued by the Architect.

# 1.4 CHANGE ORDER PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Proposed changes in the Work that will require adjustment to the Contract Sum or Contract Time will be issued by the Architect, with a detailed description of the proposed change and supplemental or revised Drawings and Specifications, if necessary.
- 1. Proposal requests issued by the Architect are for information only. Do not consider them an instruction either to stop work in progress, or to execute the proposed change.

- 2. Unless otherwise indicated in the proposal request, within twenty (20) days of receipt of the proposal request, submit to the Architect for the Owner's review an estimate of cost necessary to execute the proposed change.
- a. Include a list of quantities of products to be purchased and unit costs, along with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
  - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
- c. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.
- B. Contractor-Initiated Change Order Proposal Requests: When latent or other unforeseen conditions require modifications to the Contract, the Contractor may propose changes by submitting a request for a change to the Architect.
  - 1. Include a statement outlining the reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and/or the Contract Time.
  - 2. Include a list of quantities of products to be purchased and unit costs along with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
  - 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
  - 4. Comply with requirements in Section "Product Substitutions" if the proposed change in the Work requires the substitution of one product or system for a product or system specified.

# 1.5 ALLOWANCES

- A. Allowance Adjustment: Base each Change Order Proposal Request for an allowance cost adjustment solely on the difference between the actual purchase amount and the allowance, multiplied by the final measurement of work-in-place, with reasonable allowances, where applicable, for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.
  - 1. Include installation costs in the purchase amount only where indicated as part of the allowance.
    - 2. When requested, prepare explanations and documentation to substantiate the margins claimed.
    - 3. The Owner reserves the right to establish the actual quantity of work-inplace by independent quantity survey, measure, or count.
- B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit, within twenty (20) days of receipt of the change order authorizing work to proceed. Claims submitted later than twenty (20) days will be rejected.
  - 1. The Change Order cost amount shall not include the Contractor's or Subcontractor's indirect expense except when it is clearly demonstrated that either the nature or scope of work required was changed from that which could have been foreseen from information in Contract Documents.
  - 2. No change to the Contractor's indirect expense is permitted for selection of higher or lower priced materials or systems of the same scope and nature as originally indicated.

# 1.6 CHANGE ORDER PROCEDURES

A. Upon the Owner's approval of a Change Order Proposal Request, the Architect will issue a Change Order for signatures of the Owner and Contractor.

# 1.7 OVERHEAD AND PROFIT

- A. Overhead and Profit will be as noted elsewhere in these specifications.
- B. In reviewing change orders, the Architect will exercise his right to request a complete breakdown from the Contractor showing exact costs for labor and material, as well as delivery slips and invoices from suppliers and other subcontractors.

# **ARTICLE 110 - PRODUCT SUBSTITUTIONS**

# **PART 1 - GENERAL**

# 1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, are hereby made a part of this Section.

# 1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling requests for substitutions made after award of the Contract.
- B. The Contractor's Construction Schedule and the Schedule of Submittals are included under Section "Submittals".
- C. Standards: Refer to Section "Reference Standards and Definitions" for applicability of industry standards to products specified.
- D. Procedural requirements governing the Contractor's selection of products and product options are included under Section "Materials and Equipment".

## 1.3 DEFINITIONS

- A. Definitions used in this Article are not intended to change or modify the meaning of other terms used in the Contract Documents.
- B. Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by the Contractor after award of the Contract are considered requests for "substitutions". The following are not considered substitutions:
- 1. Specified options of products and construction methods included in Contract Documents.
- 2. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

# 1.4 SUBMITTALS

- A. Substitution Request Submittal: Requests for substitution will be considered if received within sixty (60) days after commencement of the Work. Requests received more than sixty (60) days after commencement of the Work may be considered or rejected at the discretion of the Architect.
  - 1. Submit three (3) copies of each request for substitution for consideration. Submit requests in the form and in accordance with procedures required for Change Order proposals.
  - Identify the product, or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate.
    - a. Product Data, including Drawings and descriptions of products, fabrication and installation procedures.
    - b. Samples, where applicable or requested.
    - c. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements such as size, weight, durability, performance and visual effect, i.e. color, texture, pattern, etc.
  - d. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors, that will become necessary to accommodate the proposed substitution.
  - e. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.

- f. Cost information, including a proposal of the net change, if any, in the Contract Sum.
- g. Certification by the Contractor that the substitution proposed is equal to or better in every significant respect to that required by the Contract Documents, and that it will perform adequately in the application indicated. Include the Contractor's waiver of rights to additional payment or time, that may subsequently become necessary because of the failure of the substitution to perform adequately.
- 3. Architects' Action: Within one (1) week of receipt of the request for substitution, the Architect will request additional information or documentation necessary for evaluation of the request. Within two (2) weeks of receipt of the request, or one (1) week of receipt of the additional information or documentation, which ever is later, the Architect will notify the Contractor of acceptance or rejection of the proposed substitution. If a decision on use of a proposed substitute cannot be made or obtained within the time allocated, use the product specified by name. Acceptance will be in the form of a Change Order, when a change in contract cost or time is required; or in the form of Architect's supplemental instructions when no change to contract cost or time is required.

## **PART 2 - PRODUCTS**

## 2.1 SUBSTITUTIONS

- A. Conditions: The Contractor's substitution request will be received and considered by the Architect when one or more of the following conditions are satisfied, as determined by the Architect; otherwise requests will be returned without action except to record non-compliance with these requirements.
  - 1. Extensive revisions to Contract Documents are not required.
  - 2. Proposed changes are in keeping with the intent of Contract Documents.
  - 3. The request is timely, fully documented and properly submitted.
  - 4. The request is directly related to an "or equal" clause or similar language in the Contract Documents.
  - 5. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
  - 6. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Contractor certifies that the substitution will overcome the incompatibility.

- 7. The specified product or method of construction cannot be coordinated with other materials, and where the Contractor certifies that the proposed substitution can be coordinated.
- 8. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provide the required warranty.
- 9. Where a proposed substitution involves more than one prime Contractor, each Contractor shall cooperate with the other Contractors involved to coordinate the Work, provide uniformity and consistency, and to assure compatibility of products.
- B. The Contractor's submittal and Architect's acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

# **PREVAILING WAGE RATES**

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# CERTIFIED PAYROLL REPORTING FORMS

NOTE: Successful bidder/contractor shall submit

the required certified payroll reporting forms

on a weekly basis via email to:

certifiedpayrollrecords@worcesterma.gov

City of Worcester – Purchasing Division City Hall – Room 201 455 Main Street Worcester, MA 01608

# MASSACHUSETTS WEEKLY CERTIFIED PAYROLL REPORT FORM

Company's Name:		Addres	s:							Phone	No.:			Payroll N	o.:		THOSE LA	A F E
																	TOURS VI	3 OTHITE
Employer's Signature:		Title:								Contra	ct No:	Tax Payer I	D Number	Work We	ek Ending:			
Awarding Authority's Name:		Public \	Works	Project	Name:					Public	Works F	roject Loc	ation:	Min. Wag	je Rate Shee	et Number		
General / Prime Contractor's	Name:	Subcor	tractor	's Nam	e:							"Employer'	Hourly Fring	e Benefit C	ontributions			
															(B+C+D+E)	(A x F)		
Employee Name & Complete	Work	Employee is OSHA 10 certified	Appr. Rate		I	Ho	ours Wo	rked			Project Hours (A)	Hourly Base Wage	Health & Welfare Insurance	ERISA Pension Plan	Supp. Unemp.	Total Hourly Prev. Wage	Project Gross Wages	Check No.
Address	Classification:	(?)	(%)	Su.	Mo.	Tu.	We.	Th.	Fr.	Sa.	Hours	(B)	(C)	(D)	(E)	(F)	Wages	(H)
Are all apprentice employee	es identified abo	ve curre	ently re	gistere	d with	the MA	A DLS's	Divisi	on of A	Apprent	ice Stan	dards?	,	YES		NO		
For all apprentices performing by the Massachusetts Department									tice ide	entifica	tion card	lissued		No	apprentices	are identif	fied above	
<b>NOTE:</b> Pursuant to MGL c. authority by first-class mail																		

Date Received by Awarding Authority

commencement of a criminal action or the issuance of a civil citation.

Page \_\_\_\_

# **CITY OF WORCESTER**

Monthly Workforce Repo	<u>rt</u>		
PROJECT NAME			
Construction Manager:			
Project:		Contract #:	
Period Covered:	through		

		GOAL	- 38%	GOAL	- 10%		
PROJECT-TO-DATE:	PEOPLE C	OF COLOR	FEN	IALE	MINORITY OWNED	WOMEN OWNED	
Contractor/Sub Contractor	Total Hours	PTD Hours	PTD	PTD	PTD		
Contractor/Sub-Contractor	Total nours	PTD Hours	Percentage	Hours	Percentage		
XX	600		0.0%		0.0%	YES / NO	YES / NO
						YES / NO	YES / NO
						YES / NO	YES / NO
						YES / NO	YES / NO
MONTHLY TOTAL:	600.0	0.00	0.0%	0.0	0.0%		

PROJECT NAME			
Construction Manager:			
Project:		Contract #:	
Period Covered:	through		

		GOAL	- 38%	GOAL - 10%		
PROJECT-TO-DATE:		PEOPLE (	OF COLOR	FEMALE		
Trade	Total Hours	PTD	PTD	PTD	PTD	
ITaue	Total Hours	Hours	Percentage	Hours	Percentage	
Carpenter	600.0	0.0	0.0%	0.0	0.0%	
X						
X						
X						
X						
X						
MONTHLY TOTALS	600.0	0.0	0.0%	0.0	0.0%	

# 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 has been printed on the reverse of this page 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.

In addition, every contractor and subcontractor is required to submit a copy of their weekly payroll records to the awarding authority. For every week in which an apprentice is employed, a photocopy of the apprentice's identification card must be attached to the payroll report. Once collected, the awarding authority is also required to preserve those records for three years.

In addition, each such contractor, subcontractor, or public body shall furnish to the awarding authority directly, within fifteen days after completion of its portion of the work a statement, executed by the contractor, subcontractor or public body who supervises the payment of wages, in the following form:

STATEMEN	NT OF COMPLIANCE
	, 20
I,	,
(Name of signatory party)	(Title)
do hereby state:	
That I pay or supervise the pay	ment of the persons employed by
	on the
(Contractor, subcontractor or public body) and that all mechanics and apprentices said project have been paid in accordant	
Sign	nature



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

**Prevailing Wage Rates** 

MAURA HEALY
Governor
KIM DRISCOLL
Lt. Governor

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: City of Worcester City/Town: WORCESTER

Contract Number: 8491-J6

Description of Work: Replace culvert on Salisbury Street per specs and requirements of the City of Worcester Department of Public Works

Job Location: Worcester - Salisbury Street

#### 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 updated wage schedule must be provided to all contractors, including general and subcontractors, working on the construction project.
- This annual update requirement is generally not applicable to 27F "rental of equipment" contracts. For such contracts, the prevailing wage rates issued by DLS shall remain in effect for the duration of the contract term. However, if the prevailing wage rate sheet issued does not contain wage rates for each year covered by the contract term, the Awarding Authority must request updated rate sheets from DLS and provide them to the contractor to ensure the correct rates are being paid throughout the duration of the contract. Additionally, if an Awarding Authority exercises an option to renew or extend the contract term, they must request updated rate sheets form DLS and provide them to the contractor.
- 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)
- 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.

Issue Date: 07/14/2025 Wage Request Number: 20250711164300 Page 1 of 32

Classification	<b>Effective Date</b>	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
(2 AXLE) DRIVER - EQUIPMENT	6/1/2025	\$40.95	\$15.57	\$20.17	\$0.00	\$0.00	\$76.69
TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	12/1/2025	\$40.95	\$15.57	\$21.78	\$0.00	\$0.00	\$78.30
TEMASTERS JOINT COUNCIL NO. 10 ZOINE D	1/1/2026	\$40.95	\$16.17	\$21.78	\$0.00	\$0.00	\$78.90
	6/1/2026	\$41.95	\$16.17	\$21.78	\$0.00	\$0.00	\$79.90
	12/1/2026	\$41.95	\$16.17	\$23.52	\$0.00	\$0.00	\$81.64
	1/1/2027	\$41.95	\$16.77	\$23.52	\$0.00	\$0.00	\$82.24
(3 AXLE) DRIVER - EQUIPMENT	6/1/2025	\$41.02	\$15.57	\$20.17	\$0.00	\$0.00	\$76.76
TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	12/1/2025	\$41.02	\$15.57	\$21.78	\$0.00	\$0.00	\$78.37
TEAMSTERS JOINT COUNCIE NO. 10 ZONE B	1/1/2026	\$41.02	\$16.17	\$21.78	\$0.00	\$0.00	\$78.97
	6/1/2026	\$42.02	\$16.17	\$21.78	\$0.00	\$0.00	\$79.97
	12/1/2026	\$42.02	\$16.17	\$23.52	\$0.00	\$0.00	\$81.71
	1/1/2027	\$42.02	\$16.77	\$23.52	\$0.00	\$0.00	\$82.31
(4 & 5 AXLE) DRIVER - EQUIPMENT	6/1/2025	\$41.14	\$15.57	\$20.17	\$0.00	\$0.00	\$76.88
TEAMSTERS JOINT COUNCIL NO. 10	12/1/2025	\$41.14	\$15.57	\$21.78	\$0.00	\$0.00	\$78.49
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	\$41.14	\$16.17	\$21.78	\$0.00	\$0.00	\$79.09
	6/1/2026	\$42.14	\$16.17	\$21.78	\$0.00	\$0.00	\$80.09
	12/1/2026	\$42.14	\$16.17	\$23.52	\$0.00	\$0.00	\$81.83
	1/1/2027	\$42.14	\$16.77	\$23.52	\$0.00	\$0.00	\$82.43
ADS/SUBMERSIBLE PILOT PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 2)	8/1/2024	\$117.16	\$10.08	\$11.62	\$12.67	\$0.00	\$151.53
For apprentice rates see "Apprentice- PILE DRIVER"							
AIR TRACK OPERATOR	6/1/2025	\$41.09	\$9.90	\$9.25	\$9.11	\$0.00	\$69.35
LABORERS	12/1/2025	\$42.47	\$9.90	\$9.25	\$9.11	\$0.00	\$70.73
LABORERS - ZONE 2	6/1/2026	\$43.91	\$9.90	\$9.25	\$9.11	\$0.00	\$72.17
	12/1/2026	\$45.35	\$9.90	\$9.25	\$9.11	\$0.00	\$73.61
	6/1/2027	\$46.80	\$9.90	\$9.25	\$9.11	\$0.00	\$75.06
	12/1/2027	\$48.25	\$9.90	\$9.25	\$9.11	\$0.00	\$76.51
	6/1/2028	\$49.75	\$9.90	\$9.25	\$9.11	\$0.00	\$78.01
	12/1/2028	\$51.25	\$9.90	\$9.25	\$9.11	\$0.00	\$79.51
For apprentice rates see "Apprentice- LABORER"							
AIR TRACK OPERATOR (HEAVY & HIGHWAY)	6/1/2025	\$41.09	\$9.90	\$9.25	\$9.21	\$0.00	\$69.45
LABORERS	12/1/2025	\$42.47	\$9.90	\$9.25	\$9.21	\$0.00	\$70.83
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	\$43.91	\$9.90	\$9.25	\$9.21	\$0.00	\$72.27
	12/1/2026	\$45.35	\$9.90	\$9.25	\$9.21	\$0.00	\$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)		7 12 12 2	42.50	77.2	****	7	7.2
ASBESTOS WORKER (PIPES & TANKS)	6/1/2025	\$43.80	\$14.50	\$4.30	\$6.75	\$0.00	\$69.35
HEAT & FROST INSULATORS LOCAL 6	12/1/2025	\$44.80	\$14.50	\$4.30	\$6.75	\$0.00	\$70.35
HEAT & FROST INSULATORS LOCAL 6 (WORCESTER)							
ASPHALT RAKER	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.11	\$0.00	\$68.85
LABORERS LABORERS - ZONE 2	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.11	\$0.00	\$70.23
	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.11	\$0.00	\$71.67
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.11	\$0.00	\$73.11

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Tota Rat
	6/1/2027	\$46.30	\$9.90	\$9.25	\$9.11	\$0.00	\$74.5
	12/1/2027	\$47.75	\$9.90	\$9.25	\$9.11	\$0.00	\$76.0
	6/1/2028	\$49.25	\$9.90	\$9.25	\$9.11	\$0.00	\$77.5
	12/1/2028	\$50.75	\$9.90	\$9.25	\$9.11	\$0.00	\$79.0
For apprentice rates see "Apprentice- LABORER"							
ASPHALT RAKER (HEAVY & HIGHWAY)	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.21	\$0.00	\$68.9
LABORERS	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.21	\$0.00	\$70.3
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.21	\$0.00	\$71.7
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.21	\$0.00	\$73.2
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)	1						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE	6/1/2025	\$58.33	\$15.55	\$13.25	\$3.25	\$0.00	\$90.3
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.78	\$15.55	\$13.25	\$3.25	\$0.00	\$91.8
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$61.08	\$15.55	\$13.25	\$3.25	\$0.00	\$93.13
	12/1/2026	\$62.53	\$15.55	\$13.25	\$3.25	\$0.00	\$94.5
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
BACKHOE/FRONT-END LOADER	6/1/2025	\$58.33	\$15.55	\$13.25	\$3.25	\$0.00	\$90.3
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.78	\$15.55	\$13.25	\$3.25	\$0.00	\$91.83
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$61.08	\$15.55	\$13.25	\$3.25	\$0.00	\$93.1
	12/1/2026	\$62.53	\$15.55	\$13.25	\$3.25	\$0.00	\$94.5
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
BARCO-TYPE JUMPING TAMPER	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.11	\$0.00	\$68.8
LABORERS	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.11	\$0.00	\$70.2
LABORERS - ZONE 2	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.11	\$0.00	\$71.6
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.11	\$0.00	\$73.1
	6/1/2027	\$46.30	\$9.90	\$9.25	\$9.11	\$0.00	\$74.5
	12/1/2027	\$47.75	\$9.90	\$9.25	\$9.11	\$0.00	\$76.0
	6/1/2028	\$49.25	\$9.90	\$9.25	\$9.11	\$0.00	\$77.5
	12/1/2028	\$50.75	\$9.90	\$9.25	\$9.11	\$0.00	\$79.0
For apprentice rates see "Apprentice- LABORER"							
BLOCK PAVER, RAMMER / CURB SETTER	6/1/2025	\$41.09	\$9.90	\$9.25	\$9.11	\$0.00	\$69.3
LABORERS LABORERS - ZONE 2	12/1/2025	\$42.47	\$9.90	\$9.25	\$9.11	\$0.00	\$70.7
LABORERO - ZONE Z	6/1/2026	\$43.91	\$9.90	\$9.25	\$9.11	\$0.00	\$72.1
	12/1/2026	\$45.35	\$9.90	\$9.25	\$9.11	\$0.00	\$73.6
	6/1/2027	\$46.80	\$9.90	\$9.25	\$9.11	\$0.00	\$75.0
	12/1/2027	\$48.25	\$9.90	\$9.25	\$9.11	\$0.00	\$76.5
	6/1/2028	\$49.75	\$9.90	\$9.25	\$9.11	\$0.00	\$78.0
For apprentice rates see "Apprentice- LABORER"	12/1/2028	\$51.25	\$9.90	\$9.25	\$9.11	\$0.00	\$79.5
a stappende rues see Apprende Laborda							
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY)	6/1/2025	\$41.09	\$9.90	\$9.25	\$9.21	\$0.00	\$69.4
LABORERS	12/1/2025	\$42.47	\$9.90	\$9.25	\$9.21	\$0.00	\$70.8
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	\$43.91	\$9.90	\$9.25	\$9.21	\$0.00	\$72.2
	12/1/2026	\$45.35	\$9.90	\$9.25	\$9.21	\$0.00	\$73.7

Classification	<b>Effective Date</b>	Base Wage	Health	Pension	Annuity	Unemployment	Rate
BOILER MAKER	1/1/2024	\$48.12	\$7.07	\$14.60	\$6.00	\$0.00	\$75.79
BOILERMAKERS LOCAL 29							
BOILERMAKERS LOCAL 29							

Appro	entice: BOILER M	IAKER						
Effect	tive Date: 1/1/2024							
Step	Percent	Apprentice Base Wage	I	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	65.00	\$31.28		\$7.07	\$9.32	\$3.90	\$0.00	\$51.57
2	65.00	\$31.28		\$7.07	\$9.32	\$3.90	\$0.00	\$51.57
3	70.00	\$33.68		\$7.07	\$10.03	\$4.20	\$0.00	\$54.98
4	75.00	\$36.09		\$7.07	\$10.74	\$4.50	\$0.00	\$58.40
5	80.00	\$38.50		\$7.07	\$11.45	\$4.80	\$0.00	\$61.82
6	85.00	\$40.90		\$7.07	\$12.18	\$5.10	\$0.00	\$65.25
7	90.00	\$43.31		\$7.07	\$12.88	\$5.40	\$0.00	\$68.66
8	95.00	\$45.71		\$7.07	\$13.62	\$5.70	\$0.00	\$72.10
BRICK/STONE/ARTIFICIAL MASONRY (INCL.	MASONRY	2/1/2025	\$63.66	\$11.49	\$15.57	\$7.33	\$0.00	\$98.05
WATERPROOFING) BRICKLAYERS LOCAL 3		8/1/2025	\$65.81	\$11.49	\$15.57	\$7.33	\$0.00	\$100.20
BRICKLAYERS LOCAL 3 (WORCESTER)		2/1/2026	\$67.16	\$11.49	\$15.57	\$7.33	\$0.00	\$101.55
,		8/1/2026	\$69.36	\$11.49	\$15.57	\$7.33	\$0.00	\$103.75
		2/1/2027	\$70.76	\$11.49	\$15.57	\$7.33	\$0.00	\$105.15

Appro	entice: BRICK/ST	ONE/ARTIFICIAL MASO	ONRY (INCL. M	ASONRY WATE	RPROOFING	)	
Effect	tive Date: 2/1/2025						
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$31.83	\$11.49	\$15.57	\$7.33	\$0.00	\$66.22
2	60.00	\$38.20	\$11.49	\$15.57	\$7.33	\$0.00	\$72.59
3	70.00	\$44.56	\$11.49	\$15.57	\$7.33	\$0.00	\$78.95
4	80.00	\$50.93	\$11.49	\$15.57	\$7.33	\$0.00	\$85.32
5	90.00	\$57.29	\$11.49	\$15.57	\$7.33	\$0.00	\$91.68

			CONE/ARTIFICIAL M	ASONRY (	INCL. MAS	ONRY WATER	PROOFING	)	
	Effect	ive Date: 8/1/202	5						
	Step	Percent	Apprentice Base Wage	Н	ealth	Pension	Annuity	Supplemental Unemployment	Total Rate
	1	50.00	\$32.91	\$1	11.49	\$15.57	\$7.33	\$0.00	\$67.30
	2	60.00	\$39.49	\$1	11.49	\$15.57	\$7.33	\$0.00	\$73.88
	3	70.00	\$46.07	\$1	11.49	\$15.57	\$7.33	\$0.00	\$80.46
	4	80.00	\$52.65	\$1	11.49	\$15.57	\$7.33	\$0.00	\$87.04
L	5	90.00	\$59.23	\$1	11.49	\$15.57	\$7.33	\$0.00	\$93.62
/SCRAPER			6/1/2025	\$57.68	\$15.55	\$13.25	\$3.25	\$0.00	\$89.73
NEERS LOCAL 4			12/1/2025	\$59.12	\$15.55	\$13.25	\$3.25	\$0.00	\$91.17
EERS LOCAL 4			6/1/2026	\$60.40	\$15.55	\$13.25	\$3.25	\$0.00	\$92.45

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	12/1/2026	\$61.84	\$15.55	\$13.25	\$3.25	\$0.00	\$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
CAISSON & UNDERPINNING BOTTOM MAN	6/1/2025	\$48.85	\$9.90	\$9.25	\$9.80	\$0.00	\$77.80
LABORERS LABORERS - FOUNDATION AND MARINE	12/1/2025	\$50.35	\$9.90	\$9.25	\$9.80	\$0.00	\$79.30
LABORERS - FOUNDATION AND MARINE	6/1/2026	\$51.90	\$9.90	\$9.25	\$9.80	\$0.00	\$80.85
	12/1/2026	\$53.40	\$9.90	\$9.25	\$9.80	\$0.00	\$82.35
For apprentice rates see "Apprentice- LABORER"							
CAISSON & UNDERPINNING LABORER	6/1/2025	\$47.70	\$9.90	\$9.25	\$9.80	\$0.00	\$76.65
LABORERS	12/1/2025	\$49.20	\$9.90	\$9.25	\$9.80	\$0.00	\$78.15
LABORERS - FOUNDATION AND MARINE	6/1/2026	\$50.75	\$9.90	\$9.25	\$9.80	\$0.00	\$79.70
	12/1/2026	\$52.25	\$9.90	\$9.25	\$9.80	\$0.00	\$81.20
For apprentice rates see "Apprentice- LABORER"							
CAISSON & UNDERPINNING TOP MAN	6/1/2025	\$48.03	\$9.90	\$9.25	\$9.80	\$0.00	\$76.98
LABORERS	12/1/2025	\$49.53	\$9.90	\$9.25	\$9.80	\$0.00	\$78.48
LABORERS - FOUNDATION AND MARINE	6/1/2026	\$51.08	\$9.90	\$9.25	\$9.80	\$0.00	\$80.03
	12/1/2026	\$52.58	\$9.90	\$9.25	\$9.80	\$0.00	\$81.53
For apprentice rates see "Apprentice- LABORER"							
CARBIDE CORE DRILL OPERATOR	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.11	\$0.00	\$68.85
LABORERS	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.11	\$0.00	\$70.23
LABORERS - ZONE 2	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.11	\$0.00	\$71.67
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.11	\$0.00	\$73.11
	6/1/2027	\$46.30	\$9.90	\$9.25	\$9.11	\$0.00	\$74.56
	12/1/2027	\$47.75	\$9.90	\$9.25	\$9.11	\$0.00	\$76.01
	6/1/2028	\$49.25	\$9.90	\$9.25	\$9.11	\$0.00	\$77.51
	12/1/2028	\$50.75	\$9.90	\$9.25	\$9.11	\$0.00	\$79.01
For apprentice rates see "Apprentice- LABORER"							
CARPENTER	3/1/2025	\$49.62	\$9.83	\$11.47	\$8.50	\$0.00	\$79.42
CARPENTERS ZONE 2 (Factors Massachusetta)	9/1/2025	\$50.87	\$9.83	\$11.47	\$8.50	\$0.00	\$80.67
CARPENTERS -ZONE 2 (Eastern Massachusetts)	3/1/2026	\$52.12	\$9.83	\$11.47	\$8.50	\$0.00	\$81.92
	9/1/2026	\$53.37	\$9.83	\$11.47	\$8.50	\$0.00	\$83.17
	3/1/2027	\$54.62	\$9.83	\$11.47	\$8.50	\$0.00	\$84.42

**	entice: CARPENT						
Effect	ive Date: 3/1/2025						
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	\$22.33	\$9.83	\$0.00	\$1.73	\$0.00	\$33.89
2	45.00	\$22.33	\$9.83	\$0.00	\$1.73	\$0.00	\$33.89
3	55.00	\$27.29	\$9.83	\$0.00	\$3.40	\$0.00	\$40.52
4	55.00	\$27.29	\$9.83	\$0.00	\$3.40	\$0.00	\$40.52
5	70.00	\$34.73	\$9.83	\$11.41	\$5.10	\$0.00	\$61.07
6	70.00	\$34.73	\$9.83	\$11.41	\$5.10	\$0.00	\$61.07
7	80.00	\$39.70	\$9.83	\$11.44	\$6.80	\$0.00	\$67.77
8	80.00	\$39.70	\$9.83	\$11.44	\$6.80	\$0.00	\$67.77

Classification Effective Date Base Wage Health Pension Annuity Unemployment Rate

10/1/2026

\$28.85

Appro	entice: CARPENT	TER						
Effect	tive Date: 9/1/2025	5						
Step	Percent	Apprentice Base Wage	Hea	lth	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	\$22.89	\$9	.83	\$0.00	\$1.73	\$0.00	\$34.45
2	45.00	\$22.89	\$9	.83	\$0.00	\$1.73	\$0.00	\$34.45
3	55.00	\$27.98	\$9	.83	\$0.00	\$3.40	\$0.00	\$41.21
4	55.00	\$27.98	\$9	.83	\$0.00	\$3.40	\$0.00	\$41.21
5	70.00	\$35.61	\$9	.83	\$11.41	\$5.10	\$0.00	\$61.95
6	70.00	\$35.61	\$9	.83	\$11.41	\$5.10	\$0.00	\$61.95
7	80.00	\$40.70	\$9	.83	\$11.44	\$6.80	\$0.00	\$68.77
8	80.00	\$40.70	\$9	.83	\$11.44	\$6.80	\$0.00	\$68.77
		10/1/2024	\$26.65	\$7.02	\$3.80	\$1.00	\$0.00	\$38.47
		10/1/2025	\$27.75	\$7.02	\$3.80	\$1.00	\$0.00	\$39.57

CARPENTERS-ZONE 3 (Wood Frame)
All Aspects of New Wood Frame Work

CARPENTER WOOD FRAME

CARPENTERS

Issue Date: 07/14/2025

Appro	entice: CARPENT	ER WOOD FRAME					
Effect	ive Date: 10/1/202	4					
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	\$15.99	\$7.02	\$0.00	\$0.00	\$0.00	\$23.01
2	60.00	\$15.99	\$7.02	\$0.00	\$0.00	\$0.00	\$23.01
3	65.00	\$17.32	\$7.02	\$0.00	\$1.00	\$0.00	\$25.34
4	70.00	\$18.66	\$7.02	\$0.00	\$1.00	\$0.00	\$26.68
5	75.00	\$19.99	\$7.02	\$3.80	\$1.00	\$0.00	\$31.81
6	80.00	\$21.32	\$7.02	\$3.80	\$1.00	\$0.00	\$33.14
7	85.00	\$22.65	\$7.02	\$3.80	\$1.00	\$0.00	\$34.47
8	90.00	\$23.99	\$7.02	\$3.80	\$1.00	\$0.00	\$35.81

\$7.02

\$3.80

\$1.00

\$0.00

\$40.67

Appro	entice: CARPENT	ER WOOD FRAME					
Effect	tive Date: 10/1/202	5					
_	_	Apprentice				Supplemental	Total
Step	Percent	Base Wage	Health	Pension	Annuity	Unemployment	Rate
1	60.00	\$16.65	\$7.02	\$0.00	\$0.00	\$0.00	\$23.67
2	60.00	\$16.65	\$7.02	\$0.00	\$0.00	\$0.00	\$23.67
3	65.00	\$18.04	\$7.02	\$0.00	\$1.00	\$0.00	\$26.06
4	70.00	\$19.43	\$7.02	\$0.00	\$1.00	\$0.00	\$27.45
5	75.00	\$20.81	\$7.02	\$3.80	\$1.00	\$0.00	\$32.63
6	80.00	\$22.20	\$7.02	\$3.80	\$1.00	\$0.00	\$34.02
7	85.00	\$23.59	\$7.02	\$3.80	\$1.00	\$0.00	\$35.41
8	90.00	\$24.98	\$7.02	\$3.80	\$1.00	\$0.00	\$36.80

CEMENT MASONRY/PLASTERING 7/1/2024 \$49.19 \$13.35 \$16.43 \$7.78 \$1.80 \$88.55

PAINTERS LOCAL 35 - ZONE 2

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

BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 (WORCESTER)

	Appr	entice: CEMENT M	ASONRY/PLASTE	RING					
	Effect	tive Date: 7/1/2024							
	Step	Percent	Apprentice Base Wage	Н	ealth	Pension	Annuity	Supplemental Unemployment	Total Rate
	1	50.00	\$24.60	\$	13.35	\$16.43	\$0.00	\$0.00	\$54.38
	2	60.00	\$29.51	\$	13.35	\$16.43	\$2.78	\$1.80	\$63.87
	3	65.00	\$31.97	\$	13.35	\$16.43	\$3.78	\$1.80	\$67.33
	4	70.00	\$34.43	\$	13.35	\$16.43	\$4.78	\$1.80	\$70.79
	5	75.00	\$36.89	\$	13.35	\$16.43	\$5.78	\$1.80	\$74.25
	6	80.00	\$39.35	\$	13.35	\$16.43	\$6.78	\$1.80	\$77.71
	7	90.00	\$44.27	\$	13.35	\$16.43	\$7.78	\$1.80	\$83.63
CHAIN SAW OPERATOR			6/1/2025	\$40.59	\$9.90	\$9.25	\$9.11	\$0.00	\$68.85
LABORERS ZONE 2			12/1/2025	\$41.97	\$9.90	\$9.25	\$9.11	\$0.00	\$70.23
LABORERS - ZONE 2			6/1/2026	\$43.41	\$9.90	\$9.25	\$9.11	\$0.00	\$71.67
			12/1/2026	\$44.85	\$9.90	\$9.25	\$9.11	\$0.00	\$73.11
			6/1/2027	\$46.30	\$9.90	\$9.25	\$9.11	\$0.00	\$74.56
			12/1/2027	\$47.75	\$9.90	\$9.25	\$9.11	\$0.00	\$76.01
			6/1/2028	\$49.25	\$9.90	\$9.25	\$9.11	\$0.00	\$77.51
			12/1/2028	\$50.75	\$9.90	\$9.25	\$9.11	\$0.00	\$79.01
For apprentice rates see "Apprentice-	LABORER"								
CLAM SHELLS/SLURRY BUCKET	ΓS/HEADING	MACHINES	6/1/2025	\$59.51	\$15.55	\$13.25	\$3.25	\$0.00	\$91.56
OPERATING ENGINEERS LOCAL			12/1/2025	\$60.98	\$15.55	\$13.25	\$3.25	\$0.00	\$93.03
OPERATING ENGINEERS LOCAL	. 4		6/1/2026	\$62.31	\$15.55	\$13.25	\$3.25	\$0.00	\$94.36
			12/1/2026	\$63.79	\$15.55	\$13.25	\$3.25	\$0.00	\$95.84
For apprentice rates see "Apprentice-	OPERATING	ENGINEERS"							
COMPRESSOR OPERATOR			6/1/2025	\$37.52	\$15.55	\$13.25	\$3.25	\$0.00	\$69.57
OPERATING ENGINEERS LOCAL	. 4								
OPERATING ENGINEERS LOCAL			12/1/2025	\$38.47	\$15.55	\$13.25	\$3.25	\$0.00	\$70.52
			6/1/2026	\$39.33	\$15.55 \$15.55	\$13.25 \$13.25	\$3.25 \$3.25	\$0.00 \$0.00	\$71.38
For apprentice rates see "Apprentice-	OPERATING	ENGINEERS"	12/1/2026	\$40.28	\$15.55	\$13.25	\$3.25	\$0.00	\$72.33
DELEADER (BRIDGE) PAINTERS LOCAL 35			1/1/2025	\$58.46	\$9.95	\$11.85	\$12.10	\$0.00	\$92.36

Appro	entice: DELEADE	CR (BRIDGE)					
Effect	tive Date: 1/1/2025	i					
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$29.23	\$9.95	\$0.00	\$0.00	\$0.00	\$39.18
2	55.00	\$32.15	\$9.95	\$0.00	\$6.66	\$0.00	\$48.76
3	60.00	\$35.08	\$9.95	\$0.00	\$7.26	\$0.00	\$52.29

Classification			Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	Appro	entice: DELEADE	R (BRIDGE)						
		ive Date: 1/1/2025							
	Step	Percent	Apprenti Base Wa		Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	4	65.00	\$38.	.00	\$9.95	\$0.00	\$7.87	\$0.00	\$55.82
	5	70.00	\$40.	.92	\$9.95	\$11.85	\$8.47	\$0.00	\$71.19
	6	75.00	\$43.	.85	\$9.95	\$11.85	\$9.08	\$0.00	\$74.73
	7	80.00	\$46.	.77	\$9.95	\$11.85	\$9.68	\$0.00	\$78.25
	8	90.00	\$52.	.61	\$9.95	\$11.85	\$10.89	\$0.00	\$85.30
DEMO: ADZEMAN			6/2/2025	\$47.75	\$9.90	\$9.25	\$9.65	\$0.00	\$76.55
LABORERS			12/1/2025	\$49.25		\$9.25	\$9.65	\$0.00	\$78.05
LABORERS - ZONE 2			6/1/2026	\$50.80		\$9.25	\$9.65	\$0.00	\$79.60
			12/7/2026	\$52.30		\$9.25	\$9.65	\$0.00	\$81.10
			6/7/2027	\$53.90		\$9.25	\$9.65	\$0.00	\$82.70
			12/6/2027	\$55.50		\$9.25	\$9.65	\$0.00	\$84.30
			6/5/2028	\$57.18		\$9.25	\$9.65	\$0.00	\$85.98
			12/4/2028	\$58.85	\$9.90	\$9.25	\$9.65	\$0.00	\$87.65
For apprentice rates see "Apprentice- LABO	ORER"								
DEMO: BACKHOE/LOADER/HAMMER	OPERA	TOR	6/2/2025	\$48.75	\$9.90	\$9.25	\$9.65	\$0.00	\$77.55
LABORERS			12/1/2025	\$50.25	\$9.90	\$9.25	\$9.65	\$0.00	\$79.05
LABORERS - ZONE 2			6/1/2026	\$51.80	\$9.90	\$9.25	\$9.65	\$0.00	\$80.60
			12/7/2026	\$53.30	\$9.90	\$9.25	\$9.65	\$0.00	\$82.10
			6/7/2027	\$54.90	\$9.90	\$9.25	\$9.65	\$0.00	\$83.70
			12/6/2027	\$56.50	\$9.90	\$9.25	\$9.65	\$0.00	\$85.30
			6/5/2028	\$58.18	\$9.90	\$9.25	\$9.65	\$0.00	\$86.98
			12/4/2028	\$59.85	\$9.90	\$9.25	\$9.65	\$0.00	\$88.65
For apprentice rates see "Apprentice- LABO	ORER"								
DEMO: BURNERS			6/2/2025	\$48.50	\$9.90	\$9.25	\$9.65	\$0.00	\$77.30
LABORERS			12/1/2025	\$50.00	\$9.90	\$9.25	\$9.65	\$0.00	\$78.80
LABORERS - ZONE 2			6/1/2026	\$51.55	\$9.90	\$9.25	\$9.65	\$0.00	\$80.35
			12/7/2026	\$53.05	\$9.90	\$9.25	\$9.65	\$0.00	\$81.85
			6/7/2027	\$54.65	\$9.90	\$9.25	\$9.65	\$0.00	\$83.45
			12/6/2027	\$56.25	\$9.90	\$9.25	\$9.65	\$0.00	\$85.05
			6/5/2028	\$57.93	\$9.90	\$9.25	\$9.65	\$0.00	\$86.73
			12/4/2028	\$59.60	\$9.90	\$9.25	\$9.65	\$0.00	\$88.40
For apprentice rates see "Apprentice- LABO	ORER"								
DEMO: CONCRETE CUTTER/SAWYER			6/2/2025	\$48.75	\$9.90	\$9.25	\$9.65	\$0.00	\$77.55
LABORERS LABORERS - ZONE 2			12/1/2025	\$50.25	\$9.90	\$9.25	\$9.65	\$0.00	\$79.05
LADUKERO - ZUNE Z			6/1/2026	\$51.80	\$9.90	\$9.25	\$9.65	\$0.00	\$80.60
			12/7/2026	\$53.30	\$9.90	\$9.25	\$9.65	\$0.00	\$82.10
			6/7/2027	\$54.90	\$9.90	\$9.25	\$9.65	\$0.00	\$83.70
			12/6/2027	\$56.50	\$9.90	\$9.25	\$9.65	\$0.00	\$85.30
			6/5/2028	\$58.18	\$9.90	\$9.25	\$9.65	\$0.00	\$86.98
			12/4/2028	\$59.85	\$9.90	\$9.25	\$9.65	\$0.00	\$88.65
For apprentice rates see "Apprentice- LABO	ORER"								

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
DEMO: JACKHAMMER OPERATOR	6/2/2025	\$48.50	\$9.90	\$9.25	\$9.65	\$0.00	\$77.30
LABORERS LABORERS - ZONE 2	12/1/2025	\$50.00	\$9.90	\$9.25	\$9.65	\$0.00	\$78.80
LABORERS - ZONE 2	6/1/2026	\$51.55	\$9.90	\$9.25	\$9.65	\$0.00	\$80.3
	12/7/2026	\$53.05	\$9.90	\$9.25	\$9.65	\$0.00	\$81.83
	6/7/2027	\$54.65	\$9.90	\$9.25	\$9.65	\$0.00	\$83.45
	12/6/2027	\$56.25	\$9.90	\$9.25	\$9.65	\$0.00	\$85.03
	6/5/2028	\$57.93	\$9.90	\$9.25	\$9.65	\$0.00	\$86.73
For apprentice rates see "Apprentice- LABORER"	12/4/2028	\$59.60	\$9.90	\$9.25	\$9.65	\$0.00	\$88.40
DEMO: WRECKING LABORER	6/2/2025	\$47.75	\$9.90	\$9.25	\$9.65	\$0.00	\$76.55
LABORERS	12/1/2025	\$49.25	\$9.90	\$9.25	\$9.65	\$0.00	\$78.05
LABORERS - ZONE 2	6/1/2026	\$50.80	\$9.90	\$9.25	\$9.65	\$0.00	\$79.6
	12/7/2026	\$52.30	\$9.90	\$9.25	\$9.65	\$0.00	\$81.10
	6/7/2027	\$53.90	\$9.90	\$9.25	\$9.65	\$0.00	\$82.70
	12/6/2027	\$55.50	\$9.90	\$9.25	\$9.65	\$0.00	\$84.30
	6/5/2028	\$57.18	\$9.90	\$9.25	\$9.65	\$0.00	\$85.98
	12/4/2028	\$58.85	\$9.90	\$9.25	\$9.65	\$0.00	\$87.65
For apprentice rates see "Apprentice- LABORER"							
DIRECTIONAL DRILL MACHINE OPERATOR	6/1/2025	\$57.68	\$15.55	\$13.25	\$3.25	\$0.00	\$89.7
OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.12	\$15.55	\$13.25	\$3.25	\$0.00	\$91.1
OF ENTITING ENGINEERS ESCAL 4	6/1/2026	\$60.40	\$15.55	\$13.25	\$3.25	\$0.00	\$92.4
For apprentice rates see "Apprentice- OPERATING ENGINEERS"	12/1/2026	\$61.84	\$15.55	\$13.25	\$3.25	\$0.00	\$93.89
DIVER PILE DRIVER LOCAL 56	8/1/2024	\$78.11	\$10.08	\$11.62	\$12.67	\$0.00	\$112.48
PILE DRIVER LOCAL 56 (ZONE 2) as of 8-1-24, Apprentices with diving licenses begin at second year.	% of Diver wage 70/8	30/90 2A \$69.83,	3A \$91.79,4A	\$102.14 Total	Rate		
DIVER TENDER PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 2)	8/1/2024	\$51.97	\$10.08	\$11.62	\$12.67	\$0.00	\$86.34
as of 8-1-24, Apprentices with diving licenses begin at second year.	% of Piledriver wage	70/80/90 2A \$54	.20, 3A \$73.93	,4A \$82.05 To	tal Rate		
DIVER TENDER (EFFLUENT) PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 2)	8/1/2024	\$83.69	\$10.08	\$11.62	\$12.67	\$0.00	\$118.06
For apprentice rates see "Apprentice- PILE DRIVER"							
DIVER/SLURRY (EFFLUENT) PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 2)	8/1/2024	\$117.16	\$10.08	\$11.62	\$12.67	\$0.00	\$151.53
For apprentice rates see "Apprentice- PILE DRIVER"							
DRAWBRIDGE OPERATOR (Construction) DRAWBRIDGE - SEIU LOCAL 888 DRAWBRIDGE - SEIU LOCAL 888	7/1/2020	\$26.77	\$6.67	\$3.93	\$0.00	\$0.16	\$37.53
ELECTRICIAN	9/1/2024	\$47.05	\$13.99	\$14.04	\$5.18	\$0.00	\$80.26
ELECTRICIANS LOCAL 96 ELECTRICIANS LOCAL 96	9/7/2025	\$48.16	\$14.98	\$14.30	\$5.30	\$0.00	\$82.74

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Unemployment	Rate
	9/6/2026	\$49.38	\$15.96	\$14.57	\$5.43	\$0.00	\$85.34

Appro	entice: ELECTRIC	CIAN					
Effect	tive Date: 9/1/2024						
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	\$18.82	\$13.99	\$0.56	\$0.00	\$0.00	\$33.37
2	45.00	\$21.17	\$13.99	\$0.64	\$0.00	\$0.00	\$35.80
3	48.00	\$22.58	\$13.99	\$13.31	\$2.48	\$0.00	\$52.36
4	55.00	\$25.88	\$13.99	\$13.41	\$2.85	\$0.00	\$56.13
5	65.00	\$30.58	\$13.99	\$13.55	\$3.36	\$0.00	\$61.48
6	80.00	\$37.64	\$13.99	\$13.76	\$4.14	\$0.00	\$69.53

Appr	entice: ELECTRI	CIAN					
Effect	tive Date: 9/7/2025	5					
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	\$19.26	\$14.98	\$0.58	\$0.00	\$0.00	\$34.82
2	45.00	\$21.67	\$14.98	\$0.65	\$0.00	\$0.00	\$37.30
3	48.00	\$23.12	\$14.98	\$13.55	\$2.54	\$0.00	\$54.19
4	55.00	\$26.49	\$14.98	\$13.65	\$2.92	\$0.00	\$58.04
5	65.00	\$31.30	\$14.98	\$13.80	\$3.45	\$0.00	\$63.53
6	80.00	\$38.53	\$14.98	\$14.02	\$4.24	\$0.00	\$71.77

ELEVATOR CONSTRUCTOR	1/1/2025	\$62.83	\$16.28	\$10.96	\$10.40	\$0.00	\$100.47
ELEVATOR CONSTRUCTORS LOCAL 41 ELEVATOR CONSTRUCTORS LOCAL 41	1/1/2026	\$63.68	\$16.38	\$11.06	\$10.70	\$0.00	\$101.82
ELLVATOR CONSTRUCTORS LOCAL 41	1/1/2027	\$64.53	\$16.48	\$11.16	\$11.00	\$0.00	\$103.17

Appro	entice: ELEVATO	R CONSTRUCTOR					
Effect	tive Date: 1/1/2025						
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$31.42	\$16.28	\$0.00	\$0.00	\$0.00	\$47.70
2	55.00	\$34.56	\$16.28	\$10.96	\$10.40	\$0.00	\$72.20
3	65.00	\$40.84	\$16.28	\$10.96	\$10.40	\$0.00	\$78.48
4	70.00	\$43.98	\$16.28	\$10.96	\$10.40	\$0.00	\$81.62
5	80.00	\$50.26	\$16.28	\$10.96	\$10.40	\$0.00	\$87.90

	entice: ELEVATO	PR CONSTRUCTOR					
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$31.84	\$16.38	\$0.00	\$0.00	\$0.00	\$48.22
2	55.00	\$35.02	\$16.38	\$11.06	\$10.70	\$0.00	\$73.16

Classification		Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	Apprentice: ELEVATO	OR CONSTRUCTO	R	,				
	Effective Date: 1/1/2026							
	Step Percent	Apprentic Base Wag		Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	3 65.00	\$41.3	39	\$16.38	\$11.06	\$10.70	\$0.00	\$79.53
	4 70.00	\$44.5	58	\$16.38	\$11.06	\$10.70	\$0.00	\$82.72
	5 80.00	\$50.9	94	\$16.38	\$11.06	\$10.70	\$0.00	\$89.08
ELEVATOR CONSTRUCTOR HELPER		1/1/2025	\$43.98	\$16.28	\$10.96	\$10.40	\$0.00	\$81.62
ELEVATOR CONSTRUCTORS LOCAL 4 ELEVATOR CONSTRUCTORS LOCAL 4		1/1/2026	\$44.58	\$16.38	\$11.06	\$10.70	\$0.00	\$82.72
ELEVITOR CONSTRUCTIONS EGGILE		1/1/2027	\$45.17	\$16.48	\$11.16	\$11.00	\$0.00	\$83.81
For apprentice rates see "Apprentice - ELEV	VATOR CONSTRUCTOR'	,						
FENCE & GUARD RAIL ERECTOR (HEA	AVY & HIGHWAY)	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.21	\$0.00	\$68.95
LABORERS	ST 4 \$7)	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.21	\$0.00	\$70.33
LABORERS - ZONE 2 (HEAVY & HIGHY	WAY)	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.21	\$0.00	\$71.77
		12/1/2026	\$44.85	\$9.90	\$9.25	\$9.21	\$0.00	\$73.21
For apprentice rates see "Apprentice- LABC	ORER (Heavy and Highway	7)						
FIELD ENG.INST.PERSON-BLDG,SITE,I	HVY/HWY	5/1/2025	\$53.22	\$15.30	\$13.15	\$3.25	\$0.00	\$84.92
OPERATING ENGINEERS LOCAL 4		11/1/2025	\$54.51	\$15.30	\$13.15	\$3.25	\$0.00	\$86.21
OPERATING ENGINEERS LOCAL 4		5/1/2026	\$55.95	\$15.30	\$13.15	\$3.25	\$0.00	\$87.65
		11/1/2026	\$57.24	\$15.30	\$13.15	\$3.25	\$0.00	\$88.94
		5/1/2027	\$58.67	\$15.30	\$13.15	\$3.25	\$0.00	\$90.37
For apprentice rates see "Apprentice- OPER	AATING ENGINEERS"							
FIELD ENG.PARTY CHIEF-BLDG,SITE,	HVY/HWY	5/1/2025	\$54.82	\$15.30	\$13.15	\$3.25	\$0.00	\$86.52
OPERATING ENGINEERS LOCAL 4		11/1/2025	\$56.12	\$15.30	\$13.15	\$3.25	\$0.00	\$87.82
OPERATING ENGINEERS LOCAL 4		5/1/2026	\$57.57	\$15.30	\$13.15	\$3.25	\$0.00	\$89.27
		11/1/2026	\$58.87	\$15.30	\$13.15	\$3.25	\$0.00	\$90.57
		5/1/2027	\$60.32	\$15.30	\$13.15	\$3.25	\$0.00	\$92.02
For apprentice rates see "Apprentice- OPER	RATING ENGINEERS"							
FIELD ENG.ROD PERSON-BLDG,SITE,F	HVY/HWY	5/1/2025	\$26.22	\$15.30	\$13.15	\$3.25	\$0.00	\$57.92
OPERATING ENGINEERS LOCAL 4		11/1/2025	\$26.98	\$15.30	\$13.15	\$3.25	\$0.00	\$58.68
OPERATING ENGINEERS LOCAL 4		5/1/2026	\$27.83	\$15.30	\$13.15	\$3.25	\$0.00	\$59.53
		11/1/2026	\$28.59	\$15.30	\$13.15	\$3.25	\$0.00	\$60.29
		5/1/2027	\$29.44	\$15.30	\$13.15	\$3.25	\$0.00	\$61.14
For apprentice rates see "Apprentice- OPER	RATING ENGINEERS"							
FIRE ALARM INSTALLER		9/1/2024	\$47.05	\$13.99	\$14.04	\$5.18	\$0.00	\$80.26
ELECTRICIANS LOCAL 96		9/7/2025	\$48.16	\$14.98	\$14.30	\$5.30	\$0.00	\$82.74
ELECTRICIANS LOCAL 96		9/6/2026	\$49.38	\$15.96	\$14.57	\$5.43	\$0.00	\$85.34
For apprentice rates see "Apprentice- ELEC	TRICIAN"							
FIRE ALARM REPAIR / MAINT/COMMI	ISSIONING	9/1/2024	\$47.05	\$13.99	\$14.04	\$5.18	\$0.00	\$80.26
ELECTRICIANS LOCAL 96		9/7/2025	\$48.16	\$14.98	\$14.30	\$5.30	\$0.00	\$82.74
ELECTRICIANS LOCAL 96		9/6/2026	\$49.38	\$15.96	\$14.57	\$5.43	\$0.00	\$85.34
For apprentice rates see "Apprentice- ELEC	TRICIAN"							

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
FIREMAN (ASST. ENGINEER)	6/1/2025	\$47.02	\$15.55	\$13.25	\$3.25	\$0.00	\$79.07
OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2025	\$48.19	\$15.55	\$13.25	\$3.25	\$0.00	\$80.24
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$49.25	\$15.55	\$13.25	\$3.25	\$0.00	\$81.30
	12/1/2026	\$50.43	\$15.55	\$13.25	\$3.25	\$0.00	\$82.48
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FLAGGER & SIGNALER (HEAVY & HIGHWAY)	6/1/2025	\$28.09	\$9.90	\$9.25	\$9.21	\$0.00	\$56.45
LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2025	\$28.09	\$9.90	\$9.25	\$9.21	\$0.00	\$56.45
LABORERS - ZONE 2 (HEAV I & HIGHWAT)	6/1/2026	\$29.21	\$9.90	\$9.25	\$9.21	\$0.00	\$57.57
	12/1/2026	\$29.21	\$9.90	\$9.25	\$9.21	\$0.00	\$57.57
For apprentice rates see "Apprentice- LABORER (Heavy and Highway	y)						
FLOORCOVERER FLOORCOVERERS LOCAL 2168 FLOORCOVERERS LOCAL 2168 ZONE II	3/1/2024	\$49.47	\$8.83	\$11.47	\$8.80	\$0.00	\$78.57

	Appro	entice: FLOORCOVI	ERER			,			
	Effect	ive Date: 3/1/2024							
	Step	Percent	Apprentice Base Wage		Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	1	50.00	\$24.74		\$8.83	\$0.00	\$1.76	\$0.00	\$35.33
	2	55.00	\$27.21		\$8.83	\$0.00	\$1.76	\$0.00	\$37.80
	3	60.00	\$29.68		\$8.83	\$0.00	\$3.52	\$0.00	\$42.03
	4	65.00	\$32.16		\$8.83	\$0.00	\$3.52	\$0.00	\$44.51
	5	70.00	\$34.63		\$8.83	\$11.47	\$5.28	\$0.00	\$60.21
	6	75.00	\$37.10		\$8.83	\$11.47	\$5.28	\$0.00	\$62.68
	7	80.00	\$39.58		\$8.83	\$11.47	\$7.04	\$0.00	\$66.92
	8	85.00	\$42.05		\$8.83	\$11.47	\$7.04	\$0.00	\$69.39
FORK LIFT/CHERRY PICKER			6/1/2025	\$58.33	\$15.55	\$13.25	\$3.25	\$0.00	\$90.38
OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4			12/1/2025	\$59.78	\$15.55	\$13.25	\$3.25	\$0.00	\$91.83
OTERATING ENGINEERS LOCAL 4			6/1/2026	\$61.08	\$15.55	\$13.25	\$3.25	\$0.00	\$93.13
			12/1/2026	\$62.53	\$15.55	\$13.25	\$3.25	\$0.00	\$94.58
For apprentice rates see "Apprentice- OPER	ATING	ENGINEERS"							
GENERATOR/LIGHTING PLANT/HEAT	ERS		6/1/2025	\$37.52	\$15.55	\$13.25	\$3.25	\$0.00	\$69.57
OPERATING ENGINEERS LOCAL 4			12/1/2025	\$38.47	\$15.55	\$13.25	\$3.25	\$0.00	\$70.52
OPERATING ENGINEERS LOCAL 4			6/1/2026	\$39.33	\$15.55	\$13.25	\$3.25	\$0.00	\$71.38
			12/1/2026	\$40.28	\$15.55	\$13.25	\$3.25	\$0.00	\$72.33
For apprentice rates see "Apprentice- OPER	ATING	ENGINEERS"							
GLAZIER (GLASS PLANK/AIR BARRIE GLAZIERS LOCAL 35 GLAZIERS LOCAL 35 (ZONE 2)	R/INTE	RIOR SYSTEMS)	1/1/2025	\$47.96	\$9.95	\$11.85	\$12.10	\$0.00	\$81.86

Appr	entice: GLAZIEI	R (GLASS PLANK/AIR BA	RRIER/INTERI	OR SYSTEMS)			
Effec	tive Date: 1/1/202	5					
		Apprentice				Supplemental	Total
Step	Percent	Base Wage	Health	Pension	Annuity	Unemployment	Rate

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

	Appre	entice: GLAZIER	(GLASS PLANK/AIR	BARRIE	R/INTERIOR	SYSTEMS)			
	Effect	ive Date: 1/1/2025							
	Step	Percent	Apprentice Base Wage	I	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	1	50.00	\$23.98		\$9.95	\$0.00	\$0.00	\$0.00	\$33.93
	2	55.00	\$26.38		\$9.95	\$0.00	\$6.66	\$0.00	\$42.99
	3	60.00	\$28.78		\$9.95	\$0.00	\$7.26	\$0.00	\$45.99
	4	65.00	\$31.17		\$9.95	\$0.00	\$7.87	\$0.00	\$48.99
	5	70.00	\$33.57		\$9.95	\$11.85	\$8.47	\$0.00	\$63.84
	6	75.00	\$35.97		\$9.95	\$11.85	\$9.08	\$0.00	\$66.85
	7	80.00	\$38.37		\$9.95	\$11.85	\$9.68	\$0.00	\$69.85
	8	90.00	\$43.16		\$9.95	\$11.85	\$10.89	\$0.00	\$75.85
HOISTING ENGINEER/CRANES/GRADA	ALLS		6/1/2025	\$58.33	\$15.55	\$13.25	\$3.25	\$0.00	\$90.38
OPERATING ENGINEERS LOCAL 4			12/1/2025	\$59.78	\$15.55	\$13.25	\$3.25	\$0.00	\$91.83
OPERATING ENGINEERS LOCAL 4			6/1/2026	\$61.08	\$15.55	\$13.25	\$3.25	\$0.00	\$93.13
			12/1/2026	\$62.53	\$15.55	\$13.25	\$3.25	\$0.00	\$94.58

Appro	entice: HOISTING	G ENGINEER/CRANES/G	RADALLS				
Effect	tive Date: 6/1/2025						
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	\$32.08	\$0.00	\$0.00	\$0.00	\$0.00	\$32.08
2	60.00	\$35.00	\$15.55	\$13.25	\$3.25	\$0.00	\$67.05
3	65.00	\$37.91	\$15.55	\$13.25	\$3.25	\$0.00	\$69.96
4	70.00	\$40.83	\$15.55	\$13.25	\$3.25	\$0.00	\$72.88
5	75.00	\$43.75	\$15.55	\$13.25	\$3.25	\$0.00	\$75.80
6	80.00	\$46.66	\$15.55	\$13.25	\$3.25	\$0.00	\$78.71
7	85.00	\$49.58	\$15.55	\$13.25	\$3.25	\$0.00	\$81.63
8	90.00	\$52.50	\$15.55	\$13.25	\$3.25	\$0.00	\$84.55

Appro	entice: HOISTING	ENGINEER/CRANES/G	GRADALLS				
Effect	tive Date: 12/1/202	5					
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	\$32.88	\$0.00	\$0.00	\$0.00	\$0.00	\$32.88
2	60.00	\$35.87	\$15.55	\$13.25	\$3.25	\$0.00	\$67.92
3	65.00	\$38.86	\$15.55	\$13.25	\$3.25	\$0.00	\$70.91
4	70.00	\$41.85	\$15.55	\$13.25	\$3.25	\$0.00	\$73.90
5	75.00	\$44.84	\$15.55	\$13.25	\$3.25	\$0.00	\$76.89
6	80.00	\$47.82	\$15.55	\$13.25	\$3.25	\$0.00	\$79.87
7	85.00	\$50.81	\$15.55	\$13.25	\$3.25	\$0.00	\$82.86
8	90.00	\$53.80	\$15.55	\$13.25	\$3.25	\$0.00	\$85.85

HVAC (DUCTWORK) 1/1/2025 \$42.23 \$12.20 \$10.79 \$7.95 \$2.13 \$75.30 SHEETMETAL WORKERS LOCAL 63

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
SHEETMETAL WORKERS LOCAL 63							
For apprentice rates see "Apprentice- SHEET METAL WORKER"							
HVAC (ELECTRICAL CONTROLS)	9/1/2024	\$47.05	\$13.99	\$14.04	\$5.18	\$0.00	\$80.26
ELECTRICIANS LOCAL 96 ELECTRICIANS LOCAL 96	9/7/2025	\$48.16	\$14.98	\$14.30	\$5.30	\$0.00	\$82.74
ELECTRICIANS LOCAL 70	9/6/2026	\$49.38	\$15.96	\$14.57	\$5.43	\$0.00	\$85.34
For apprentice rates see "Apprentice- ELECTRICIAN"							
HVAC (TESTING AND BALANCING - AIR)	1/1/2025	\$42.23	\$12.20	\$10.79	\$7.95	\$2.13	\$75.30
SHEETMETAL WORKERS LOCAL 63 SHEETMETAL WORKERS LOCAL 63							
For apprentice rates see "Apprentice- SHEET METAL WORKER"							
HVAC (TESTING AND BALANCING -WATER)	3/1/2025	\$55.00	\$11.30	\$9.71	\$8.06	\$0.00	\$84.07
PLUMBERS LOCAL 4	9/1/2025	\$56.40	\$11.30	\$9.71	\$8.06	\$0.00	\$85.47
PLUMBERS LOCAL 4	3/1/2026	\$57.80	\$11.30	\$9.71	\$8.06	\$0.00	\$86.87
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/P	PIPEFITTER"						
HVAC MECHANIC	3/1/2025	\$55.00	\$11.30	\$9.71	\$8.06	\$0.00	\$84.07
PLUMBERS LOCAL 4 PLUMBERS LOCAL 4	9/1/2025	\$56.40	\$11.30	\$9.71	\$8.06	\$0.00	\$85.47
TEUMBERS ECCAE 4	3/1/2026	\$57.80	\$11.30	\$9.71	\$8.06	\$0.00	\$86.87
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/P	IPEFITTER"						
HYDRAULIC DRILLS	6/1/2025	\$41.09	\$9.90	\$9.25	\$9.11	\$0.00	\$69.35
LABORERS LABORERS - ZONE 2	12/1/2025	\$42.47	\$9.90	\$9.25	\$9.11	\$0.00	\$70.73
LABORERS - ZONE 2	6/1/2026	\$43.91	\$9.90	\$9.25	\$9.11	\$0.00	\$72.17
	12/1/2026	\$45.35	\$9.90	\$9.25	\$9.11	\$0.00	\$73.61
	6/1/2027	\$46.80	\$9.90	\$9.25	\$9.11	\$0.00	\$75.06
	12/1/2027	\$48.25	\$9.90	\$9.25	\$9.11	\$0.00	\$76.51
	6/1/2028	\$49.75	\$9.90	\$9.25	\$9.11	\$0.00	\$78.01
	12/1/2028	\$51.25	\$9.90	\$9.25	\$9.11	\$0.00	\$79.51
For apprentice rates see "Apprentice- LABORER"							
HYDRAULIC DRILLS (HEAVY & HIGHWAY)	6/1/2025	\$41.09	\$9.90	\$9.25	\$9.21	\$0.00	\$69.45
LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2025	\$42.47	\$9.90	\$9.25	\$9.21	\$0.00	\$70.83
	6/1/2026	\$43.91	\$9.90	\$9.25	\$9.21	\$0.00	\$72.27
	12/1/2026	\$45.35	\$9.90	\$9.25	\$9.21	\$0.00	\$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway	y)						
INSULATOR (PIPES & TANKS)	9/1/2024	\$51.23	\$14.75	\$9.52	\$10.09	\$0.00	\$85.59
HEAT & FROST INSULATORS LOCAL 6 HEAT & FROST INSULATORS LOCAL 6 (WORCESTER)	9/1/2025	\$54.31	\$14.75	\$9.52	\$10.09	\$0.00	\$88.67
· · · · · · · · · · · · · · · · · · ·	9/1/2026	\$57.38	\$14.75	\$9.52	\$10.09	\$0.00	\$91.74

••	entice: INSULATO	OR (PIPES & TANKS)					
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$25.62	\$14.75	\$9.27	\$5.05	\$0.00	\$54.69
2	60.00	\$30.74	\$14.75	\$9.32	\$6.05	\$0.00	\$60.86

Classification Effective Date Base Wage Health Pension Annuity Unemployment Rate

3/16/2024

\$53.67

Appr	entice: INSU	ULATOR (PIPES & TANKS)										
Effective Date: 9/1/2024												
		Apprentice	** **			Supplemental	Total					
Step	Percent	Base Wage	Health	Pension	Annuity	Unemployment	Rate					
3	70.00	\$35.86	\$14.75	\$9.37	\$7.06	\$0.00	\$67.04					
4	80.00	\$40.98	\$14.75	\$9.42	\$8.07	\$0.00	\$73.22					

Apprentice: INSULATOR (PIPES & TANKS) Effective Date: 9/1/2025 Apprentice Supplemental Total Step Percent Health Unemployment Base Wage Pension Annuity Rate 1 50.00 \$27.16 \$14.75 \$9.27 \$5.05 \$0.00 \$56.23 2 60.00 \$32.59 \$14.75 \$9.32 \$0.00 \$62.71 \$6.05 3 70.00 \$38.02 \$14.75 \$9.37 \$7.06 \$0.00 \$69.20 4 80.00 \$43.45 \$14.75 \$9.42 \$8.07 \$0.00 \$75.69

\$8.35

\$12.70

\$14.00

\$0.00

\$88.72

IRONWORKER/WELDER IRONWORKERS LOCAL 7 IRONWORKERS LOCAL 7 (WORCESTER AREA)

Appro	entice: IRONWOI	RKER/WELDER					
Effect	tive Date: 3/16/202	24					
G4	<b>D</b>	Apprentice	** **	ъ.	,	Supplemental	Total
Step	Percent	Base Wage	Health	Pension	Annuity	Unemployment	Rate
1	60.00	\$32.20	\$8.35	\$12.70	\$14.00	\$0.00	\$67.25
2	70.00	\$37.57	\$8.35	\$12.70	\$14.00	\$0.00	\$72.62
3	75.00	\$40.25	\$8.35	\$12.70	\$14.00	\$0.00	\$75.30
4	80.00	\$42.94	\$8.35	\$12.70	\$14.00	\$0.00	\$77.99
5	85.00	\$45.62	\$8.35	\$12.70	\$14.00	\$0.00	\$80.67
6	90.00	\$48.30	\$8.35	\$12.70	\$14.00	\$0.00	\$83.35

JACKHAMMER & PAVING BREAKER OPERATOR	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.11	\$0.00	\$68.85
LABORERS LABORERS - ZONE 2	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.11	\$0.00	\$70.23
LABORERS - ZOINE 2	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.11	\$0.00	\$71.67
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.11	\$0.00	\$73.11
	6/1/2027	\$46.30	\$9.90	\$9.25	\$9.11	\$0.00	\$74.56
	12/1/2027	\$47.75	\$9.90	\$9.25	\$9.11	\$0.00	\$76.01
	6/1/2028	\$49.25	\$9.90	\$9.25	\$9.11	\$0.00	\$77.51
	12/1/2028	\$50.75	\$9.90	\$9.25	\$9.11	\$0.00	\$79.01
For apprentice rates see "Apprentice- LABORER"							
LABORER	6/1/2025	\$40.34	\$9.90	\$9.25	\$9.11	\$0.00	\$68.60
LABORERS	12/1/2025	\$41.72	\$9.90	\$9.25	\$9.11	\$0.00	\$69.98
LABORERS - ZONE 2	6/1/2026	\$43.16	\$9.90	\$9.25	\$9.11	\$0.00	\$71.42
	12/1/2026	\$44.60	\$9.90	\$9.25	\$9.11	\$0.00	\$72.86
	6/1/2027	\$46.05	\$9.90	\$9.25	\$9.11	\$0.00	\$74.31

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Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
12/1/2027	\$47.50	\$9.90	\$9.25	\$9.11	\$0.00	\$75.76
6/1/2028	\$49.00	\$9.90	\$9.25	\$9.11	\$0.00	\$77.26
12/1/2028	\$50.50	\$9.90	\$9.25	\$9.11	\$0.00	\$78.76

Appro	entice: LABORE	R					
Effect	tive Date: 6/1/202	25					
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	\$24.20	\$9.90	\$9.25	\$9.11	\$0.00	\$52.46
2	70.00	\$28.24	\$9.90	\$9.25	\$9.11	\$0.00	\$56.50
3	80.00	\$32.27	\$9.90	\$9.25	\$9.11	\$0.00	\$60.53
4	90.00	\$36.31	\$9.90	\$9.25	\$9.11	\$0.00	\$64.57

	Appre	entice: LABOR	ER						
	Effect	ive Date: 12/1/2	2025						
	Step	Percent	Apprentice Base Wage	I	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	1	60.00	\$25.03		\$9.90	\$9.25	\$9.11	\$0.00	\$53.29
	2	70.00	\$29.20		\$9.90	\$9.25	\$9.11	\$0.00	\$57.46
	3	80.00	\$33.38		\$9.90	\$9.25	\$9.11	\$0.00	\$61.64
	4	90.00	\$37.55		\$9.90	\$9.25	\$9.11	\$0.00	\$65.81
LABORER (HEAVY & HIGHWAY)			6/1/2025	\$40.34	\$9.90	\$9.25	\$9.21	\$0.00	\$68.70
LABORERS - ZONE 2 (HEAVY & HIGHWAY)		12/1/2025	\$41.72	\$9.90	\$9.25	\$9.21	\$0.00	\$70.08	
		6/1/2026	\$43.16	\$9.90	\$9.25	\$9.21	\$0.00	\$71.52	
			12/1/2026	\$44.60	\$9.90	\$9.25	\$9.21	\$0.00	\$72.96

Appro	Apprentice: LABORER (HEAVY & HIGHWAY)												
Effective Date: 6/1/2025													
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate						
1	60.00	\$24.20	\$9.90	\$9.25	\$9.21	\$0.00	\$52.56						
2	70.00	\$28.24	\$9.90	\$9.25	\$9.21	\$0.00	\$56.60						
3	80.00	\$32.27	\$9.90	\$9.25	\$9.21	\$0.00	\$60.63						
4	90.00	\$36.31	\$9.90	\$9.25	\$9.21	\$0.00	\$64.67						

Appro	Apprentice: LABORER (HEAVY & HIGHWAY)												
Effect	tive Date: 12/1	/2025											
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate						
1	60.00	\$25.03	\$9.90	\$9.25	\$9.21	\$0.00	\$53.39						
2	70.00	\$29.20	\$9.90	\$9.25	\$9.21	\$0.00	\$57.56						
3	80.00	\$33.38	\$9.90	\$9.25	\$9.21	\$0.00	\$61.74						
4	90.00	\$37.55	\$9.90	\$9.25	\$9.21	\$0.00	\$65.91						

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
LABORER: CARPENTER TENDER	6/1/2025	\$40.34	\$9.90	\$9.25	\$9.11	\$0.00	\$68.60
LABORERS LABORERS - ZONE 2	12/1/2025	\$41.72	\$9.90	\$9.25	\$9.11	\$0.00	\$69.98
LABORERS - ZONE 2	6/1/2026	\$43.16	\$9.90	\$9.25	\$9.11	\$0.00	\$71.42
	12/1/2026	\$44.60	\$9.90	\$9.25	\$9.11	\$0.00	\$72.86
	6/1/2027	\$46.05	\$9.90	\$9.25	\$9.11	\$0.00	\$74.31
	12/1/2027	\$47.50	\$9.90	\$9.25	\$9.11	\$0.00	\$75.76
	6/1/2028	\$49.00	\$9.90	\$9.25	\$9.11	\$0.00	\$77.26
	12/1/2028	\$50.50	\$9.90	\$9.25	\$9.11	\$0.00	\$78.76
For apprentice rates see "Apprentice- LABORER"							
LABORER: CEMENT FINISHER TENDER	6/1/2025	\$40.34	\$9.90	\$9.25	\$9.11	\$0.00	\$68.60
LABORERS LABORERS - ZONE 2	12/1/2025	\$41.72	\$9.90	\$9.25	\$9.11	\$0.00	\$69.98
EABORERS - ZOIVE 2	6/1/2026	\$43.16	\$9.90	\$9.25	\$9.11	\$0.00	\$71.42
	12/1/2026	\$44.60	\$9.90	\$9.25	\$9.11	\$0.00	\$72.86
	6/1/2027	\$46.05	\$9.90	\$9.25	\$9.11	\$0.00	\$74.31
	12/1/2027	\$47.50	\$9.90	\$9.25	\$9.11	\$0.00	\$75.76
	6/1/2028	\$49.00	\$9.90	\$9.25	\$9.11	\$0.00	\$77.26
	12/1/2028	\$50.50	\$9.90	\$9.25	\$9.11	\$0.00	\$78.76
For apprentice rates see "Apprentice- LABORER"							
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER	6/2/2025	\$40.43	\$9.90	\$9.25	\$9.17	\$0.00	\$68.75
LABORERS LABORERS - ZONE 2	12/1/2025	\$41.81	\$9.90	\$9.25	\$9.17	\$0.00	\$70.13
LABORERS - ZONE 2	6/1/2026	\$43.25	\$9.90	\$9.25	\$9.17	\$0.00	\$71.57
	12/7/2026	\$44.69	\$9.90	\$9.25	\$9.17	\$0.00	\$73.01
	6/7/2027	\$46.14	\$9.90	\$9.25	\$9.17	\$0.00	\$74.46
	12/6/2027	\$47.59	\$9.90	\$9.25	\$9.17	\$0.00	\$75.91
	6/5/2028	\$49.09	\$9.90	\$9.25	\$9.17	\$0.00	\$77.41
	12/4/2028	\$50.59	\$9.90	\$9.25	\$9.17	\$0.00	\$78.91
For apprentice rates see "Apprentice- LABORER"							
LABORER: MASON TENDER	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.11	\$0.00	\$68.85
LABORERS	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.11	\$0.00	\$70.23
LABORERS - ZONE 2	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.11	\$0.00	\$71.67
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.11	\$0.00	\$73.11
	6/1/2027	\$46.30	\$9.90	\$9.25	\$9.11	\$0.00	\$74.56
	12/1/2027	\$47.75	\$9.90	\$9.25	\$9.11	\$0.00	\$76.01
	6/1/2028	\$49.25	\$9.90	\$9.25	\$9.11	\$0.00	\$77.51
	12/1/2028	\$50.75	\$9.90	\$9.25	\$9.11	\$0.00	\$79.01
For apprentice rates see "Apprentice- LABORER"							
LABORER: MASON TENDER (HEAVY & HIGHWAY)	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.21	\$0.00	\$68.95
LABORERS	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.21	\$0.00	\$70.33
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.21	\$0.00	\$71.77
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.21	\$0.00	\$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway							
LABORER: MULTI-TRADE TENDER	6/1/2025	\$40.34	\$9.90	\$9.25	\$9.11	\$0.00	\$68.60
LABORERS	12/1/2025	\$41.72	\$9.90	\$9.25	\$9.11	\$0.00	\$69.98
LABORERS - ZONE 2	6/1/2026	\$43.16	\$9.90	\$9.25	\$9.11	\$0.00	\$71.42
	12/1/2026	\$44.60	\$9.90	\$9.25	\$9.11	\$0.00	\$72.86
	12/1/2020	Ψ-7.00	Ψ2.20	Ψ.Δ.	Ψ7.11	φ0.00	Ψ12.00

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Tota Rate
	6/1/2027	\$46.05	\$9.90	\$9.25	\$9.11	\$0.00	\$74.31
	12/1/2027	\$47.50	\$9.90	\$9.25	\$9.11	\$0.00	\$75.76
	6/1/2028	\$49.00	\$9.90	\$9.25	\$9.11	\$0.00	\$77.26
	12/1/2028	\$50.50	\$9.90	\$9.25	\$9.11	\$0.00	\$78.76
For apprentice rates see "Apprentice- LABORER"							
LABORER: TREE REMOVER	6/1/2025	\$40.34	\$9.90	\$9.25	\$9.11	\$0.00	\$68.60
LABORERS	12/1/2025	\$41.72	\$9.90	\$9.25	\$9.11	\$0.00	\$69.98
LABORERS - ZONE 2	6/1/2026	\$43.16	\$9.90	\$9.25	\$9.11	\$0.00	\$71.42
	12/1/2026	\$44.60	\$9.90	\$9.25	\$9.11	\$0.00	\$72.86
	6/1/2027	\$46.05	\$9.90	\$9.25	\$9.11	\$0.00	\$74.31
	12/1/2027	\$47.50	\$9.90	\$9.25	\$9.11	\$0.00	\$75.76
	6/1/2028	\$49.00	\$9.90	\$9.25	\$9.11	\$0.00	\$77.26
	12/1/2028	\$50.50	\$9.90	\$9.25	\$9.11	\$0.00	\$78.76
LAGER REAM OPERATOR	6/1/2025	£40.50	¢0.00	¢0.25	¢0.11	¢0.00	¢.co. 0.5
LASER BEAM OPERATOR LABORERS	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.11	\$0.00	
LABORERS	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.11	\$0.00	\$70.23
LABORERS	12/1/2025 6/1/2026	\$41.97 \$43.41	\$9.90 \$9.90	\$9.25 \$9.25	\$9.11 \$9.11	\$0.00 \$0.00	\$70.23 \$71.67
LABORERS	12/1/2025 6/1/2026 12/1/2026	\$41.97 \$43.41 \$44.85	\$9.90 \$9.90 \$9.90	\$9.25 \$9.25 \$9.25	\$9.11 \$9.11 \$9.11	\$0.00 \$0.00 \$0.00	\$70.23 \$71.67 \$73.11
LABORERS	12/1/2025 6/1/2026 12/1/2026 6/1/2027	\$41.97 \$43.41 \$44.85 \$46.30	\$9.90 \$9.90 \$9.90 \$9.90	\$9.25 \$9.25 \$9.25 \$9.25	\$9.11 \$9.11 \$9.11 \$9.11	\$0.00 \$0.00 \$0.00 \$0.00	\$70.23 \$71.67 \$73.11 \$74.56
	12/1/2025 6/1/2026 12/1/2026 6/1/2027 12/1/2027	\$41.97 \$43.41 \$44.85 \$46.30 \$47.75	\$9.90 \$9.90 \$9.90 \$9.90 \$9.90	\$9.25 \$9.25 \$9.25 \$9.25 \$9.25	\$9.11 \$9.11 \$9.11 \$9.11	\$0.00 \$0.00 \$0.00 \$0.00 \$0.00	\$70.23 \$71.67 \$73.11 \$74.56 \$76.01
LABORERS	12/1/2025 6/1/2026 12/1/2026 6/1/2027 12/1/2027 6/1/2028	\$41.97 \$43.41 \$44.85 \$46.30 \$47.75 \$49.25	\$9.90 \$9.90 \$9.90 \$9.90 \$9.90	\$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25	\$9.11 \$9.11 \$9.11 \$9.11 \$9.11	\$0.00 \$0.00 \$0.00 \$0.00 \$0.00	\$68.85 \$70.23 \$71.67 \$73.11 \$74.56 \$76.01 \$77.51
LABORERS	12/1/2025 6/1/2026 12/1/2026 6/1/2027 12/1/2027	\$41.97 \$43.41 \$44.85 \$46.30 \$47.75	\$9.90 \$9.90 \$9.90 \$9.90 \$9.90	\$9.25 \$9.25 \$9.25 \$9.25 \$9.25	\$9.11 \$9.11 \$9.11 \$9.11	\$0.00 \$0.00 \$0.00 \$0.00 \$0.00	\$70.23 \$71.67 \$73.11 \$74.56 \$76.01
LABORERS LABORERS - ZONE 2	12/1/2025 6/1/2026 12/1/2026 6/1/2027 12/1/2027 6/1/2028	\$41.97 \$43.41 \$44.85 \$46.30 \$47.75 \$49.25	\$9.90 \$9.90 \$9.90 \$9.90 \$9.90	\$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25	\$9.11 \$9.11 \$9.11 \$9.11 \$9.11	\$0.00 \$0.00 \$0.00 \$0.00 \$0.00	\$70.23 \$71.67 \$73.11 \$74.56 \$76.01 \$77.51
LABORERS LABORERS - ZONE 2  For apprentice rates see "Apprentice- LABORER"  LASER BEAM OPERATOR (HEAVY & HIGHWAY) LABORERS	12/1/2025 6/1/2026 12/1/2026 6/1/2027 12/1/2027 6/1/2028 12/1/2028	\$41.97 \$43.41 \$44.85 \$46.30 \$47.75 \$49.25 \$50.75	\$9.90 \$9.90 \$9.90 \$9.90 \$9.90 \$9.90	\$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25	\$9.11 \$9.11 \$9.11 \$9.11 \$9.11 \$9.11	\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00	\$70.23 \$71.67 \$73.11 \$74.56 \$76.01 \$77.51 \$79.01
LABORERS LABORERS - ZONE 2  For apprentice rates see "Apprentice- LABORER"  LASER BEAM OPERATOR (HEAVY & HIGHWAY) LABORERS	12/1/2025 6/1/2026 12/1/2026 6/1/2027 12/1/2027 6/1/2028 12/1/2028	\$41.97 \$43.41 \$44.85 \$46.30 \$47.75 \$49.25 \$50.75	\$9.90 \$9.90 \$9.90 \$9.90 \$9.90 \$9.90	\$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25	\$9.11 \$9.11 \$9.11 \$9.11 \$9.11 \$9.11 \$9.11	\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00	\$70.23 \$71.67 \$73.11 \$74.56 \$76.01 \$77.51 \$79.01
LABORERS LABORERS - ZONE 2  For apprentice rates see "Apprentice- LABORER"  LASER BEAM OPERATOR (HEAVY & HIGHWAY) LABORERS	12/1/2025 6/1/2026 12/1/2026 6/1/2027 12/1/2027 6/1/2028 12/1/2028	\$41.97 \$43.41 \$44.85 \$46.30 \$47.75 \$49.25 \$50.75	\$9.90 \$9.90 \$9.90 \$9.90 \$9.90 \$9.90 \$9.90	\$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25	\$9.11 \$9.11 \$9.11 \$9.11 \$9.11 \$9.11 \$9.21	\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00	\$70.23 \$71.67 \$73.11 \$74.56 \$76.01 \$77.51 \$79.01 \$68.95 \$70.33
LABORERS LABORERS - ZONE 2  For apprentice rates see "Apprentice- LABORER"	12/1/2025 6/1/2026 12/1/2026 6/1/2027 12/1/2028 12/1/2028 6/1/2025 12/1/2025 6/1/2026 12/1/2026	\$41.97 \$43.41 \$44.85 \$46.30 \$47.75 \$49.25 \$50.75	\$9.90 \$9.90 \$9.90 \$9.90 \$9.90 \$9.90 \$9.90	\$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25	\$9.11 \$9.11 \$9.11 \$9.11 \$9.11 \$9.11 \$9.21 \$9.21	\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00	\$70.23 \$71.67 \$73.11 \$74.56 \$76.01
LABORERS LABORERS - ZONE 2  For apprentice rates see "Apprentice- LABORER"  LASER BEAM OPERATOR (HEAVY & HIGHWAY)  LABORERS  LABORERS - ZONE 2 (HEAVY & HIGHWAY)  For apprentice rates see "Apprentice- LABORER (Heavy and Highway)	12/1/2025 6/1/2026 12/1/2026 6/1/2027 12/1/2028 12/1/2028 6/1/2025 12/1/2025 6/1/2026 12/1/2026	\$41.97 \$43.41 \$44.85 \$46.30 \$47.75 \$49.25 \$50.75	\$9.90 \$9.90 \$9.90 \$9.90 \$9.90 \$9.90 \$9.90	\$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25	\$9.11 \$9.11 \$9.11 \$9.11 \$9.11 \$9.11 \$9.21 \$9.21	\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00	\$70.23 \$71.67 \$73.11 \$74.56 \$76.01 \$77.51 \$79.01 \$68.95 \$70.33 \$71.77 \$73.21
LABORERS LABORERS - ZONE 2  For apprentice rates see "Apprentice- LABORER"  LASER BEAM OPERATOR (HEAVY & HIGHWAY)  LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)  For apprentice rates see "Apprentice- LABORER (Heavy and Highwar)  MARBLE & TILE FINISHERS  BRICKLAYERS LOCAL 3	12/1/2025 6/1/2026 12/1/2026 6/1/2027 12/1/2028 12/1/2028 6/1/2028 6/1/2025 12/1/2025 6/1/2026 12/1/2026 ghway)	\$41.97 \$43.41 \$44.85 \$46.30 \$47.75 \$49.25 \$50.75 \$40.59 \$41.97 \$43.41 \$44.85	\$9.90 \$9.90 \$9.90 \$9.90 \$9.90 \$9.90 \$9.90 \$9.90 \$9.90	\$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25	\$9.11 \$9.11 \$9.11 \$9.11 \$9.11 \$9.11 \$9.21 \$9.21 \$9.21 \$9.21	\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00	\$70.23 \$71.67 \$73.11 \$74.56 \$76.01 \$77.51 \$79.01 \$68.95 \$70.33 \$71.77 \$73.21
LABORERS LABORERS - ZONE 2  For apprentice rates see "Apprentice- LABORER"  LASER BEAM OPERATOR (HEAVY & HIGHWAY)  LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2025 6/1/2026 12/1/2026 6/1/2027 12/1/2027 6/1/2028 12/1/2028 6/1/2025 12/1/2025 6/1/2026 12/1/2026 ghway)	\$41.97 \$43.41 \$44.85 \$46.30 \$47.75 \$49.25 \$50.75 \$40.59 \$41.97 \$43.41 \$44.85	\$9.90 \$9.90 \$9.90 \$9.90 \$9.90 \$9.90 \$9.90 \$9.90 \$9.90	\$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25 \$9.25	\$9.11 \$9.11 \$9.11 \$9.11 \$9.11 \$9.11 \$9.21 \$9.21 \$9.21 \$9.21	\$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00	\$70.23 \$71.67 \$73.11 \$74.56 \$76.01 \$77.51 \$79.01 \$68.95 \$70.33

2/1/2027

\$56.04

Appr	entice: MARBLE	& TILE FINISHERS					
Effect	tive Date: 2/1/2025						
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$25.18	\$11.49	\$15.57	\$6.05	\$0.00	\$58.29
2	60.00	\$30.22	\$11.49	\$15.57	\$6.05	\$0.00	\$63.33
3	70.00	\$35.25	\$11.49	\$15.57	\$6.05	\$0.00	\$68.36
4	80.00	\$40.29	\$11.49	\$15.57	\$6.05	\$0.00	\$73.40
5	90.00	\$45.32	\$11.49	\$15.57	\$6.05	\$0.00	\$78.43

\$11.49

\$15.57

\$6.05

\$0.00

\$89.15

Classification			Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	Appr	entice: MARBLE &	& TILE FINISHER	S		-			
		tive Date: 8/1/2025							
	Step	Percent	Apprentic Base Wag		Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	1	50.00	\$26.0	4	\$11.49	\$15.57	\$6.05	\$0.00	\$59.15
	2	60.00	\$31.2	5	\$11.49	\$15.57	\$6.05	\$0.00	\$64.36
	3	70.00	\$36.4	6	\$11.49	\$15.57	\$6.05	\$0.00	\$69.57
	4	80.00	\$41.6	6	\$11.49	\$15.57	\$6.05	\$0.00	\$74.77
	5	90.00	\$46.8	7	\$11.49	\$15.57	\$6.05	\$0.00	\$79.98
MARBLE MASONS, TILELAYERS & T	TERRAZZ	O MECH	2/1/2025	\$65.82	\$11.49	\$15.57	\$7.99	\$0.00	\$100.87
BRICKLAYERS LOCAL 3	2144.122	o meen	8/1/2025	\$67.97	\$11.49	\$15.57	\$7.99	\$0.00	\$103.02
BRICKLAYERS LOCAL 3 - MARBLE	& TILE		2/1/2026	\$67.97 \$69.32	\$11.49	\$15.57 \$15.57	\$7.99 \$7.99	\$0.00	\$103.02
			2/1/2026 8/1/2026	\$69.32 \$71.52	\$11.49	\$15.57 \$15.57	\$7.99 \$7.99	\$0.00	\$104.57
			2/1/2027	\$71.32	\$11.49	\$15.57 \$15.57	\$7.99 \$7.99	\$0.00	\$100.57
			2/1/2027	\$12.72	ψ11.42	\$13.37	\$1.77	φ0.00	\$107.57
	Appr	entice: MARBLE N	MASONS,TILELA	YERS & TE	ERRAZZO ME	СН			
	Effec	tive Date: 2/1/2025							
	Step	Percent	Apprentic Base Wag		Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	1	50.00	\$32.9	1	\$11.49	\$15.57	\$7.99	\$0.00	\$67.96
	2	60.00	\$39.4	9	\$11.49	\$15.57	\$7.99	\$0.00	\$74.54
	3	70.00	\$46.0	7	\$11.49	\$15.57	\$7.99	\$0.00	\$81.12
	4	80.00	\$52.6	6	\$11.49	\$15.57	\$7.99	\$0.00	\$87.71
	5	90.00	\$59.2	4	\$11.49	\$15.57	\$7.99	\$0.00	\$94.29
	Appr	entice: MARBLE M	MASONS,TILELA	YERS & TE	ERRAZZO ME	СН			
	Effec	tive Date: 8/1/2025							
	Step	Percent	Apprentic Base Wag		Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	1	50.00	\$33.9	9	\$11.49	\$15.57	\$7.99	\$0.00	\$69.04
	2	60.00	\$40.7	8	\$11.49	\$15.57	\$7.99	\$0.00	\$75.83
	3	70.00	\$47.5	8	\$11.49	\$15.57	\$7.99	\$0.00	\$82.63
	4	80.00	\$54.3	8	\$11.49	\$15.57	\$7.99	\$0.00	\$89.43
	5	90.00	\$61.1	7	\$11.49	\$15.57	\$7.99	\$0.00	\$96.22
MECH. SWEEPER OPERATOR (ON C	ONST STO	(FES)	6/1/2025	\$57.68	\$15.55	\$13.25	\$3.25	\$0.00	\$89.73
OPERATING ENGINEERS LOCAL 4	O1101. BI	. <b></b> .)							
OPERATING ENGINEERS LOCAL 4			12/1/2025 6/1/2026	\$59.12 \$60.40	\$15.55 \$15.55	\$13.25 \$13.25	\$3.25 \$3.25	\$0.00 \$0.00	\$91.17
			12/1/2026	\$60.40 \$61.84	\$15.55 \$15.55	\$13.25 \$13.25	\$3.25 \$3.25	\$0.00	\$92.45 \$93.89
For apprentice rates see "Apprentice- OP	ERATING	ENGINEERS"	12/1/2026	ф01.84	ф13.33	\$15.25	\$5.25	\$0.00	<b>پ</b> ائ.85
MECHANICS MAINTENANCE			6/1/2025	\$57.68	\$15.55	\$13.25	\$3.25	\$0.00	\$89.73
OPERATING ENGINEERS LOCAL 4			12/1/2025	\$59.12	\$15.55	\$13.25	\$3.25	\$0.00	\$91.17
OPERATING ENGINEERS LOCAL 4			6/1/2026	\$60.40	\$15.55 \$15.55	\$13.25 \$13.25	\$3.25	\$0.00	\$92.45
			5, 1, 2020	φου.+υ	Ψ15.55	Ψ13.23	Ψ.2.2	Ψ0.00	Ψ/4.43

Issue Date: 07/14/2025

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
E CONTRACTOR OF THE CONTRACTOR	12/1/2026	\$61.84	\$15.55	\$13.25	\$3.25	\$0.00	\$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
MILLWRIGHT (Zone 3)	1/6/2025	\$43.48	\$10.08	\$11.47	\$9.75	\$0.00	\$74.78
MILLWRIGHTS LOCAL 1121 MILLWRIGHTS LOCAL 1121 - Zone 3	1/5/2026	\$45.76	\$10.08	\$11.47	\$9.75	\$0.00	\$77.06

Apprentice: MILLWRIGHT (Zone 3)

Effective Date: 1/5/2026

Appr	entice: MILLWRI	IGHT (Zone 3)					
Effect	tive Date: 1/6/2025	3					
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	\$23.91	\$10.08	\$0.00	\$5.36	\$0.00	\$39.35
2	65.00	\$28.26	\$10.08	\$0.00	\$6.34	\$0.00	\$44.68
3	75.00	\$32.61	\$10.08	\$11.47	\$7.31	\$0.00	\$61.47
4	85.00	\$36.96	\$10.08	\$11.47	\$8.29	\$0.00	\$66.80

s	Step	Percent	Apprentice Base Wage	1	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	1	55.00	\$25.17		\$10.08	\$0.00	\$5.36	\$0.00	\$40.61
	2	65.00	\$29.74		\$10.08	\$0.00	\$6.34	\$0.00	\$46.16
	3	75.00	\$34.32		\$10.08	\$11.47	\$7.31	\$0.00	\$63.18
	4	85.00	\$38.90		\$10.08	\$11.47	\$8.29	\$0.00	\$68.74
MORTAR MIXER			6/1/2025	\$40.59	\$9.90	\$9.25	\$9.11	\$0.00	\$68.85
LABORERS			12/1/2025	\$41.97	\$9.90	\$9.25	\$9.11	\$0.00	\$70.23
LABORERS - ZONE 2			6/1/2026	\$43.41	\$9.90	\$9.25	\$9.11	\$0.00	\$71.67
			12/1/2026	\$44.85	\$9.90	\$9.25	\$9.11	\$0.00	\$73.11
			6/1/2027	\$46.30	\$9.90	\$9.25	\$9.11	\$0.00	\$74.56
			12/1/2027	\$47.75	\$9.90	\$9.25	\$9.11	\$0.00	\$76.01
			6/1/2028	\$49.25	\$9.90	\$9.25	\$9.11	\$0.00	\$77.51
			12/1/2028	\$50.75	\$9.90	\$9.25	\$9.11	\$0.00	\$79.01
For apprentice rates see "Apprentice- LABOR	ER"								
OILER (OTHER THAN TRUCK CRANES,G	RADA	LLS)	6/1/2025	\$25.97	\$15.30	\$13.15	\$3.25	\$0.00	\$57.67
OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4			12/1/2025	\$26.63	\$15.30	\$13.15	\$3.25	\$0.00	\$58.33
OFERATING ENGINEERS LOCAL 4			6/1/2026	\$27.22	\$15.30	\$13.15	\$3.25	\$0.00	\$58.92
			12/1/2026	\$27.89	\$15.30	\$13.15	\$3.25	\$0.00	\$59.59
For apprentice rates see "Apprentice- OPERA"	TING I	ENGINEERS"							
OILER (TRUCK CRANES, GRADALLS)			6/1/2025	\$31.80	\$15.30	\$13.15	\$3.25	\$0.00	\$63.50
OPERATING ENGINEERS LOCAL 4			12/1/2025	\$32.60	\$15.30	\$13.15	\$3.25	\$0.00	\$64.30
OPERATING ENGINEERS LOCAL 4			6/1/2026	\$33.32	\$15.30	\$13.15	\$3.25	\$0.00	\$65.02
			12/1/2026	\$34.12	\$15.30	\$13.15	\$3.25	\$0.00	\$65.82
For apprentice rates see "Apprentice- OPERA"	TING I	ENGINEERS"							
OTHER POWER DRIVEN EQUIPMENT - C	LASS	ш	6/1/2025	\$57.68	\$15.55	\$13.25	\$3.25	\$0.00	\$89.73

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.12	\$15.55	\$13.25	\$3.25	\$0.00	\$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$60.40	\$15.55	\$13.25	\$3.25	\$0.00	\$92.45
	12/1/2026	\$61.84	\$15.55	\$13.25	\$3.25	\$0.00	\$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
PAINTER (BRIDGES/TANKS)	1/1/2025	\$58.46	\$9.95	\$11.85	\$12.10	\$0.00	\$92.36
PAINTERS LOCAL 35							
PAINTERS LOCAL 35 - ZONE 2							

Appro	entice: PAINTER (	(BRIDGES/TANKS)					
Effect	tive Date: 1/1/2025						
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$29.23	\$9.95	\$0.00	\$0.00	\$0.00	\$39.18
2	55.00	\$32.15	\$9.95	\$0.00	\$6.66	\$0.00	\$48.76
3	60.00	\$35.08	\$9.95	\$0.00	\$7.26	\$0.00	\$52.29
4	65.00	\$38.00	\$9.95	\$0.00	\$7.87	\$0.00	\$55.82
5	70.00	\$40.92	\$9.95	\$11.85	\$8.47	\$0.00	\$71.19
6	75.00	\$43.85	\$9.95	\$11.85	\$9.08	\$0.00	\$74.73
7	80.00	\$46.77	\$9.95	\$11.85	\$9.68	\$0.00	\$78.25
8	90.00	\$52.61	\$9.95	\$11.85	\$10.89	\$0.00	\$85.30

\* If 30% or more of surfaces to be painted are new construction,

1/1/2025 \$49.36 \$9.95 \$11.85

\$12.10

\$0.00 \$83.26

NEW paint rate shall be used.

PAINTERS LOCAL 35

PAINTERS LOCAL 35 - ZONE 2

Appro	Apprentice: PAINTER (SPRAY OR SANDBLAST, NEW) *											
Effect	tive Date: 1/1/2025											
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate					
1	50.00	\$24.68	\$9.95	\$0.00	\$0.00	\$0.00	\$34.63					
2	55.00	\$27.15	\$9.95	\$0.00	\$6.66	\$0.00	\$43.76					
3	60.00	\$29.62	\$9.95	\$0.00	\$7.26	\$0.00	\$46.83					
4	65.00	\$32.08	\$9.95	\$0.00	\$7.87	\$0.00	\$49.90					
5	70.00	\$34.55	\$9.95	\$11.85	\$8.47	\$0.00	\$64.82					
6	75.00	\$37.02	\$9.95	\$11.85	\$9.08	\$0.00	\$67.90					
7	80.00	\$39.49	\$9.95	\$11.85	\$9.68	\$0.00	\$70.97					
8	90.00	\$44.42	\$9.95	\$11.85	\$10.89	\$0.00	\$77.11					

\$9.95

PAINTER (SPRAY OR SANDBLAST, REPAINT)

PAINTERS LOCAL 35

Issue Date: 07/14/2025

PAINTERS LOCAL 35 - ZONE 2

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\$11.85

\$12.10

\$0.00

\$81.32

1/1/2025

\$47.42

Classification Effective Date Base Wage Health Pension Annuity Unemployment Rate

Appr	Apprentice: PAINTER (SPRAY OR SANDBLAST, REPAINT)											
Effect	tive Date: 1/1/2025											
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate					
зієр	rercent	Dase wage	Health	rension	Amulty	Chempioyment	Kate					
1	50.00	\$23.71	\$9.95	\$0.00	\$0.00	\$0.00	\$33.66					
2	55.00	\$26.08	\$9.95	\$0.00	\$6.66	\$0.00	\$42.69					
3	60.00	\$28.45	\$9.95	\$0.00	\$7.26	\$0.00	\$45.66					
4	65.00	\$30.82	\$9.95	\$0.00	\$7.87	\$0.00	\$48.64					
5	70.00	\$33.19	\$9.95	\$11.85	\$8.47	\$0.00	\$63.46					
6	75.00	\$35.57	\$9.95	\$11.85	\$9.08	\$0.00	\$66.45					
7	80.00	\$37.94	\$9.95	\$11.85	\$9.68	\$0.00	\$69.42					
8	90.00	\$42.68	\$9.95	\$11.85	\$10.89	\$0.00	\$75.37					

PAINTER / TAPER (BRUSH, NEW) \*

1/1/2025 \$47.96 \$9.95 \$11.85 \$12.10 \$0.00 \$81.86

NEW paint rate shall be used.

PAINTERS LOCAL 35

PAINTERS LOCAL 35 - ZONE 2

Appro	entice: PAINTER	TAPER (BRUSH, NEW)	*				
Effect	tive Date: 1/1/2025						
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$23.98	\$9.95	\$0.00	\$0.00	\$0.00	\$33.93
2	55.00	\$26.38	\$9.95	\$0.00	\$6.66	\$0.00	\$42.99
3	60.00	\$28.78	\$9.95	\$0.00	\$7.26	\$0.00	\$45.99
4	65.00	\$31.17	\$9.95	\$0.00	\$7.87	\$0.00	\$48.99
5	70.00	\$33.57	\$9.95	\$11.85	\$8.47	\$0.00	\$63.84
6	75.00	\$35.97	\$9.95	\$11.85	\$9.08	\$0.00	\$66.85
7	80.00	\$38.37	\$9.95	\$11.85	\$9.68	\$0.00	\$69.85
8	90.00	\$43.16	\$9.95	\$11.85	\$10.89	\$0.00	\$75.85

\$9.95

\$11.85

\$12.10

\$0.00

\$79.92

PAINTER / TAPER (BRUSH, REPAINT) PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 2

> Apprentice: PAINTER / TAPER (BRUSH, REPAINT) Effective Date: 1/1/2025 Apprentice Supplemental **Total** Step Percent Base Wage Health Pension Annuity Unemployment Rate 50.00 \$23.01 \$9.95 \$0.00 \$0.00 \$0.00 \$32.96 2 55.00 \$25.31 \$9.95 \$0.00 \$6.66 \$0.00 \$41.92 3 60.00 \$27.61 \$7.26 \$9.95 \$0.00 \$0.00 \$44.82 4 65.00 \$29.91 \$9.95 \$0.00 \$7.87 \$0.00 \$47.73 5 70.00 \$32.21 \$9.95 \$11.85 \$8.47 \$62.48 \$0.00 6 75.00 \$34.52 \$9.95 \$11.85 \$9.08 \$0.00 \$65.40

1/1/2025

\$46.02

<sup>\*</sup> If 30% or more of surfaces to be painted are new construction,

Classification			Effective Date Ba	ase Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	Appr	entice: PAINTER /	TAPER (BRUSH, R	EPAINT)	,			,	
	Effect	tive Date: 1/1/2025							
	Step	Percent	Apprentice Base Wage		Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	7	80.00	\$36.82		\$9.95	\$11.85	\$9.68	\$0.00	\$68.30
	8	90.00	\$41.42		\$9.95	\$11.85	\$10.89	\$0.00	\$74.11
DAINITED TO A SELC MADVINGS (LIE AV)	удись	IW A V	6/1/2025	\$40.34	\$9.90	\$9.25	\$9.21	\$0.00	\$68.70
PAINTER TRAFFIC MARKINGS (HEAV LABORERS	1/HIGE	IWAI)							
LABORERS - ZONE 2 (HEAVY & HIGH	WAY)		12/1/2025 6/1/2026	\$41.72 \$43.16	\$9.90 \$9.90	\$9.25 \$9.25	\$9.21 \$9.21	\$0.00 \$0.00	\$70.08 \$71.52
			12/1/2026	\$44.60	\$9.90	\$9.25	\$9.21	\$0.00	\$71.32
For apprentice rates see "Apprentice- LABO	ORER (I	Heavy and Highway)		ψ++.00	Ψ7.70	Ψ).23	Ψ7.21	ψ0.00	Ψ12.70
PANEL & PICKUP TRUCKS DRIVER			6/1/2025	\$40.78	\$15.57	\$20.17	\$0.00	\$0.00	\$76.52
TEAMSTERS JOINT COUNCIL NO. 10	ONED		12/1/2025	\$40.78	\$15.57	\$21.78	\$0.00	\$0.00	\$78.13
TEAMSTERS JOINT COUNCIL NO. 10 Z	ONE B		1/1/2026	\$40.78	\$16.17	\$21.78	\$0.00	\$0.00	\$78.73
			6/1/2026	\$41.78	\$16.17	\$21.78	\$0.00	\$0.00	\$79.73
			12/1/2026	\$41.78	\$16.17	\$23.52	\$0.00	\$0.00	\$81.47
			1/1/2027	\$41.78	\$16.77	\$23.52	\$0.00	\$0.00	\$82.07
PIER AND DOCK CONSTRUCTOR (UNIDECK) PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 2)			8/1/2024	\$51.97	\$10.08	\$11.62	\$12.67	\$0.00	\$86.34
For apprentice rates see "Apprentice- PILE	DRIVE	· · · · · · · · · · · · · · · · · · ·							
PILE DRIVER PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 2)			8/1/2024	\$51.97	\$10.08	\$11.62	\$12.67	\$0.00	\$86.34
	Appr	entice: PILE DRIV	ER						
		entice: PILE DRIV	ER						
			Apprentice Base Wage		Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	Effect	tive Date: 8/1/2024	Apprentice		Health \$10.08	Pension \$0.00	Annuity		
	Effect Step	Percent	Apprentice Base Wage					Unemployment	Rate

	1 -		7			4 - 1		4 - 1 - 1	+
	2	55.00	\$28.58	\$1	10.08	\$0.00	\$5.07	\$0.00	\$43.73
	3	70.00	\$36.38	\$1	10.08	\$11.62	\$7.60	\$0.00	\$65.68
	4	80.00	\$41.58	\$1	10.08	\$11.62	\$10.14	\$0.00	\$73.42
PIPELAYER			6/1/2025	\$40.59	\$9.90	\$9.25	\$9.11	\$0.00	\$68.85
LABORERS			12/1/2025	\$41.97	\$9.90	\$9.25	\$9.11	\$0.00	\$70.23
LABORERS - ZONE 2			6/1/2026	\$43.41	\$9.90	\$9.25	\$9.11	\$0.00	\$71.67
			12/1/2026	\$44.85	\$9.90	\$9.25	\$9.11	\$0.00	\$73.11
			6/1/2027	\$46.30	\$9.90	\$9.25	\$9.11	\$0.00	\$74.56
			12/1/2027	\$47.75	\$9.90	\$9.25	\$9.11	\$0.00	\$76.01
			6/1/2028	\$49.25	\$9.90	\$9.25	\$9.11	\$0.00	\$77.51
			12/1/2028	\$50.75	\$9.90	\$9.25	\$9.11	\$0.00	\$79.01
For apprentice rates see "Apprentice- LABO	ORER"								

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
PIPELAYER (HEAVY & HIGHWAY)	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.21	\$0.00	\$68.95
LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.21	\$0.00	\$70.33
LABORERS - ZONE 2 (IIEA VI & HIGHWAI)	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.21	\$0.00	\$71.77
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.21	\$0.00	\$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway	)						
PLUMBER & PIPEFITTER	3/1/2025	\$55.00	\$11.30	\$9.71	\$8.06	\$0.00	\$84.07
PLUMBERS LOCAL 4 PLUMBERS LOCAL 4	9/1/2025	\$56.40	\$11.30	\$9.71	\$8.06	\$0.00	\$85.47
TEOMBERS ECCRET	3/1/2026	\$57.80	\$11.30	\$9.71	\$8.06	\$0.00	\$86.87

Appr	entice: PLUMBER	& PIPEFITTER					
Effec	tive Date: 3/1/2025						
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	\$22.00	\$11.30	\$0.00	\$0.00	\$0.00	\$33.30
2	50.00	\$27.50	\$11.30	\$0.00	\$0.00	\$0.00	\$38.80
3	60.00	\$33.00	\$11.30	\$0.00	\$0.00	\$0.00	\$44.30
4	70.00	\$38.50	\$11.30	\$0.00	\$8.06	\$0.00	\$57.86
5	80.00	\$44.00	\$11.30	\$0.00	\$8.06	\$0.00	\$63.36

	Appr	entice: PLUMBER &	& PIPEFITTER						
	Effect	tive Date: 9/1/2025							
	Step	Percent	Apprentice Base Wage	н	ealth	Pension	Annuity	Supplemental Unemployment	Total Rate
	1	40.00	\$22.56	\$	11.30	\$0.00	\$0.00	\$0.00	\$33.86
	2	50.00	\$28.20	\$	11.30	\$0.00	\$0.00	\$0.00	\$39.50
	3	60.00	\$33.84	\$	11.30	\$0.00	\$0.00	\$0.00	\$45.14
	4	70.00	\$39.48	\$	11.30	\$0.00	\$8.06	\$0.00	\$58.84
	5	80.00	\$45.12	\$	11.30	\$0.00	\$8.06	\$0.00	\$64.48
PNEUMATIC CONTROLS (TEMP.)			3/1/2025	\$55.00	\$11.30	\$9.71	\$8.06	\$0.00	\$84.07
LUMBERS LOCAL 4 LUMBERS LOCAL 4			9/1/2025	\$56.40	\$11.30	\$9.71	\$8.06	\$0.00	\$85.47
PLUMBERS LOCAL 4		3/1/2026	\$57.80	\$11.30	\$9.71	\$8.06	\$0.00	\$86.87	
For apprentice rates see "Apprentice- PIPEI	FITTER'	or "PLUMBER/PIP	EFITTER"						
PNEUMATIC DRILL/TOOL OPERATOR	-		6/1/2025	\$41.09	\$9.90	\$9.25	\$8.29	\$0.00	\$68.53
LABORERS			12/1/2025	\$42.47	\$9.90	\$9.25	\$8.29	\$0.00	\$69.91
LABORERS - ZONE 2			6/1/2026	\$43.91	\$9.90	\$9.25	\$8.29	\$0.00	\$71.35
			12/1/2026	\$45.35	\$9.90	\$9.25	\$8.29	\$0.00	\$72.79
			6/1/2027	\$46.80	\$9.90	\$9.25	\$8.29	\$0.00	\$74.24
			12/1/2027	\$48.25	\$9.90	\$9.25	\$8.29	\$0.00	\$75.69
			6/1/2028	\$49.75	\$9.90	\$9.25	\$8.29	\$0.00	\$77.19
			12/1/2028	\$51.25	\$9.90	\$9.25	\$8.29	\$0.00	\$78.69
For apprentice rates see "Apprentice- LABO	ORER"								
PNEUMATIC DRILL/TOOL OPERATOR	(HEAV	Y & HIGHWAY)	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.21	\$0.00	\$68.95
ABORERS	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.21	\$0.00	\$70.33		

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.21	\$0.00	\$71.77
For apprentice rates see "Apprentice- LABORER (Heavy and Highway	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.21	\$0.00	\$73.21
POWDERMAN & BLASTER	6/1/2025	\$41.34	\$9.90	\$9.25	\$9.11	\$0.00	\$69.60
LABORERS LABORERS - ZONE 2	12/1/2025	\$42.72	\$9.90	\$9.25	\$9.11	\$0.00	\$70.98
LADURERS - ZUNE 2	6/1/2026	\$44.16	\$9.90	\$9.25	\$9.11	\$0.00	\$72.42
	12/1/2026	\$45.60	\$9.90	\$9.25	\$9.11	\$0.00	\$73.86
	6/1/2027	\$47.05	\$9.90	\$9.25	\$9.11	\$0.00	\$75.31
	12/1/2027	\$48.50	\$9.90	\$9.25	\$9.11	\$0.00	\$76.76
	6/1/2028	\$50.00	\$9.90	\$9.25	\$9.11	\$0.00	\$78.26
For apprentice rates see "Apprentice- LABORER"	12/1/2028	\$51.50	\$9.90	\$9.25	\$9.11	\$0.00	\$79.76
POWDERMAN & BLASTER (HEAVY & HIGHWAY)	6/1/2025	\$41.34	\$9.65	\$9.25	\$9.21	\$0.00	\$69.45
LABORERS	12/1/2025	\$42.72	\$9.65	\$9.25	\$9.21	\$0.00	\$70.83
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	\$44.16	\$9.65	\$9.25	\$9.21	\$0.00	\$70.83
	12/1/2026	\$45.60	\$9.65	\$9.25	\$9.21	\$0.00	\$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway		φ.υ.σο	Ψ,105	ψ,.25	ψ>.21	φοιου	φισιιί
POWER SHOVEL/DERRICK/TRENCHING MACHINE	6/1/2025	\$58.33	\$15.55	\$13.25	\$3.25	\$0.00	\$90.38
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.78	\$15.55	\$13.25	\$3.25	\$0.00	\$91.83
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$61.08	\$15.55	\$13.25	\$3.25	\$0.00	\$93.13
For apprentice rates see "Apprentice- OPERATING ENGINEERS"	12/1/2026	\$62.53	\$15.55	\$13.25	\$3.25	\$0.00	\$94.58
PUMP OPERATOR (CONCRETE)	6/1/2025	\$57.68	\$15.55	\$13.25	\$3.25	\$0.00	\$89.73
OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.12	\$15.55	\$13.25	\$3.25	\$0.00	\$91.17
OI EMATING ENGINEERS EGGAL 4	6/1/2026	\$60.40	\$15.55	\$13.25	\$3.25	\$0.00	\$92.45
For apprentice rates see "Apprentice- OPERATING ENGINEERS"	12/1/2026	\$61.84	\$15.55	\$13.25	\$3.25	\$0.00	\$93.89
PUMP OPERATOR (DEWATERING, OTHER) OPERATING ENGINEERS LOCAL 4	6/1/2025	\$37.52	\$15.55	\$13.25	\$3.25	\$0.00	\$69.57
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$38.47	\$15.55	\$13.25	\$3.25	\$0.00	\$70.52
	6/1/2026	\$39.33	\$15.55	\$13.25	\$3.25	\$0.00	\$71.38
For apprentice rates see "Apprentice- OPERATING ENGINEERS"	12/1/2026	\$40.28	\$15.55	\$13.25	\$3.25	\$0.00	\$72.33
READY-MIX CONCRETE DRIVER TEAMSTERS 170 TEAMSTERS 170 - Dauphinais (Bellingham)	1/1/2025	\$27.60	\$11.26	\$6.15	\$0.00	\$0.00	\$45.01
RECLAIMERS	6/1/2025	\$57.68	\$15.55	\$13.25	\$3.25	\$0.00	\$89.73
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$57.08 \$59.12	\$15.55 \$15.55	\$13.25 \$13.25	\$3.25	\$0.00	\$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$59.12 \$60.40	\$15.55 \$15.55	\$13.25 \$13.25	\$3.25	\$0.00	\$91.17
	12/1/2026	\$61.84	\$15.55 \$15.55	\$13.25 \$13.25	\$3.25	\$0.00	\$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"	12, 1/2020	Ψ01.0τ	Ψ10.00	Ψ10.20	Ψ3.23	ψ0.00	ψ <i>,</i> υ.υ <i>)</i>
RIDE-ON MOTORIZED BUGGY OPERATOR	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.11	\$0.00	\$68.85
LABORERS LABORERS ZONE 2	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.11	\$0.00	\$70.23
LABORERS - ZONE 2	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.11	\$0.00	\$71.67

Issue Date: 07/14/2025

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.11	\$0.00	\$73.11
	6/1/2027	\$46.30	\$9.90	\$9.25	\$9.11	\$0.00	\$74.56
	12/1/2027	\$47.75	\$9.90	\$9.25	\$9.11	\$0.00	\$76.01
	6/1/2028	\$49.25	\$9.90	\$9.25	\$9.11	\$0.00	\$77.51
	12/1/2028	\$50.75	\$9.90	\$9.25	\$9.11	\$0.00	\$79.01
For apprentice rates see "Apprentice- LABORER"							
ROLLER/SPREADER/MULCHING MACHINE	6/1/2025	\$57.68	\$15.55	\$13.25	\$3.25	\$0.00	\$89.73
OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.12	\$15.55	\$13.25	\$3.25	\$0.00	\$91.17
OFERATING ENGINEERS LOCAL 4	6/1/2026	\$60.40	\$15.55	\$13.25	\$3.25	\$0.00	\$92.45
	12/1/2026	\$61.84	\$15.55	\$13.25	\$3.25	\$0.00	\$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg)	2/1/2025	\$52.03	\$13.28	\$12.67	\$9.03	\$0.00	\$87.01
ROOFERS LOCAL 33 ROOFERS LOCAL 33	8/1/2025	\$53.53	\$13.28	\$12.67	\$9.03	\$0.00	\$88.51
ROOF ERG EGENE 33	2/1/2026	\$54.78	\$13.28	\$12.67	\$9.03	\$0.00	\$89.76

	Apprentice: ROOFER (Inc.Roofer Waterproofing &Roofer Damproofg)											
Effect	tive Date: 2/1/2025											
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate					
1	50.00	\$26.02	\$13.28	\$6.52	\$9.03	\$0.00	\$54.85					
2	60.00	\$31.22	\$13.28	\$12.67	\$9.03	\$0.00	\$66.20					
3	65.00	\$33.82	\$13.28	\$12.67	\$9.03	\$0.00	\$68.80					
4	75.00	\$39.02	\$13.28	\$12.67	\$9.03	\$0.00	\$74.00					
5	85.00	\$44.23	\$13.28	\$12.67	\$9.03	\$0.00	\$79.21					

	Effect	ive Date: 8/1/2025							
	Step	Percent	Apprentice Base Wage	I	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	1	50.00	\$26.77	5	\$13.28	\$6.52	\$9.03	\$0.00	\$55.60
	2	60.00	\$32.12	5	\$13.28	\$12.67	\$9.03	\$0.00	\$67.10
	3	65.00	\$34.79	5	\$13.28	\$12.67	\$9.03	\$0.00	\$69.77
	4	75.00	\$40.15	5	\$13.28	\$12.67	\$9.03	\$0.00	\$75.13
	5	85.00	\$45.50	5	\$13.28	\$12.67	\$9.03	\$0.00	\$80.48
ROOFER SLATE / TILE / PRECAST CON	CRETE		2/1/2025	\$52.28	\$13.28	\$12.67	\$9.03	\$0.00	\$87.26
ROOFERS LOCAL 33 ROOFERS LOCAL 33			8/1/2025	\$53.78	\$13.28	\$12.67	\$9.03	\$0.00	\$88.76
ROOTERS EOCAL 33			2/1/2026	\$55.03	\$13.28	\$12.67	\$9.03	\$0.00	\$90.01
For apprentice rates see "Apprentice- ROOF	ER"								
SHEETMETAL WORKER SHEETMETAL WORKERS LOCAL 63 SHEETMETAL WORKERS LOCAL 63			1/1/2025	\$42.23	\$12.20	\$10.79	\$7.95	\$2.13	\$75.30

 ${\bf Apprentice: ROOFER\ (Inc. Roofer\ Waterproofing\ \& Roofer\ Damproofg)}$ 

SPRINKLER FITTERS LOCAL 669

Issue Date: 07/14/2025

Classification Effective Date Base Wage Health Pension Annuity Unemployment Rate

	Appr	entice: SHEETMET	AL WORKER						
	Effect	tive Date: 1/1/2025							
	Step	Percent	Apprentice Base Wage	F	Iealth	Pension	Annuity	Supplemental Unemployment	Total Rate
	1	45.00	\$19.00		\$5.49	\$4.86	\$0.00	\$0.85	\$30.20
	2	50.00	\$21.12		\$6.10	\$5.40	\$0.00	\$0.94	\$33.56
	3	55.00	\$23.23		\$6.71	\$9.71	\$0.00	\$1.15	\$40.80
	4	60.00	\$25.34		\$7.32	\$9.71	\$0.00	\$1.23	\$43.60
	5	65.00	\$27.45		\$7.93	\$9.71	\$0.00	\$1.31	\$46.40
	6	70.00	\$29.56		\$8.54	\$9.71	\$0.00	\$1.39	\$49.20
	7	75.00	\$31.67		\$9.15	\$9.71	\$0.00	\$1.47	\$52.00
	8	80.00	\$33.78		\$9.76	\$9.71	\$7.95	\$1.78	\$62.98
	9	85.00	\$35.90	\$	510.37	\$9.71	\$7.95	\$1.86	\$65.79
	10	90.00	\$38.01	\$	510.98	\$9.71	\$7.95	\$1.94	\$68.59
				****	***	****	***	***	
SPECIALIZED EARTH MOVING EQUIP TEAMSTERS JOINT COUNCIL NO. 10	< 35 TC	ONS	6/1/2025	\$41.24	\$15.57	\$20.17	\$0.00	\$0.00	\$76.98
TEAMSTERS JOINT COUNCIL NO. 10 Z	ONE B		12/1/2025	\$41.24	\$15.57	\$21.78	\$0.00	\$0.00	\$78.59
			1/1/2026	\$41.24	\$16.17	\$21.78	\$0.00	\$0.00	\$79.19
			6/1/2026	\$42.24	\$16.17	\$21.78	\$0.00	\$0.00	\$80.19
			12/1/2026	\$42.24	\$16.17	\$23.52	\$0.00	\$0.00	\$81.93
			1/1/2027	\$42.24	\$16.77	\$23.52	\$0.00	\$0.00	\$82.53
SPECIALIZED EARTH MOVING EQUIP	> 35 TO	ONS	6/1/2025	\$41.53	\$15.57	\$20.17	\$0.00	\$0.00	\$77.27
TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 Z	ONE D		12/1/2025	\$41.53	\$15.57	\$21.78	\$0.00	\$0.00	\$78.88
TEAMS TERS JOINT COUNCIL NO. 10 Z	ONE B		1/1/2026	\$41.53	\$16.17	\$21.78	\$0.00	\$0.00	\$79.48
			6/1/2026	\$42.53	\$16.17	\$21.78	\$0.00	\$0.00	\$80.48
			12/1/2026	\$42.53	\$16.17	\$23.52	\$0.00	\$0.00	\$82.22
			1/1/2027	\$42.53	\$16.77	\$23.52	\$0.00	\$0.00	\$82.82
SPRINKLER FITTER SPRINKLER FITTERS LOCAL 669			4/1/2023	\$47.43	\$11.45	\$7.20	\$9.41	\$0.00	\$75.49

Effect	tive Date: 4/1/2023						
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	\$21.34	\$8.22	\$0.00	\$0.00	\$0.00	\$29.56
2	50.00	\$23.72	\$8.22	\$0.00	\$0.00	\$0.00	\$31.94
3	55.00	\$26.09	\$11.45	\$7.20	\$0.00	\$0.00	\$44.74
4	60.00	\$28.46	\$11.45	\$7.20	\$1.15	\$0.00	\$48.26
5	65.00	\$30.83	\$11.45	\$7.20	\$1.15	\$0.00	\$50.63
6	70.00	\$33.20	\$11.45	\$7.20	\$1.40	\$0.00	\$53.25
7	75.00	\$35.57	\$11.45	\$7.20	\$1.40	\$0.00	\$55.62
8	80.00	\$37.94	\$11.45	\$7.20	\$1.40	\$0.00	\$57.99
9	85.00	\$40.32	\$11.45	\$7.20	\$1.40	\$0.00	\$60.37
10	90.00	\$42.69	\$11.45	\$7.20	\$1.40	\$0.00	\$62.74

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
STEAM BOILER OPERATOR	6/1/2025	\$57.68	\$15.55	\$13.25	\$3.25	\$0.00	\$89.73
OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.12	\$15.55	\$13.25	\$3.25	\$0.00	\$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$60.40	\$15.55	\$13.25	\$3.25	\$0.00	\$92.45
	12/1/2026	\$61.84	\$15.55	\$13.25	\$3.25	\$0.00	\$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN	6/1/2025	\$57.68	\$15.55	\$13.25	\$3.25	\$0.00	\$89.73
OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.12	\$15.55	\$13.25	\$3.25	\$0.00	\$91.17
OI ERATING ENGINEERS ECCAL 4	6/1/2026	\$60.40	\$15.55	\$13.25	\$3.25	\$0.00	\$92.45
	12/1/2026	\$61.84	\$15.55	\$13.25	\$3.25	\$0.00	\$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
TERRAZZO FINISHERS	2/1/2025	\$64.74	\$11.49	\$15.57	\$8.02	\$0.00	\$99.82
BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 - MARBLE & TILE	8/1/2025	\$66.89	\$11.49	\$15.57	\$8.02	\$0.00	\$101.97
BRICKENT ERG EOCHE 3 - MINDEL & TIEL	2/1/2026	\$68.24	\$11.49	\$15.57	\$8.02	\$0.00	\$103.32
	8/1/2026	\$70.44	\$11.49	\$15.57	\$8.02	\$0.00	\$105.52
	2/1/2027	\$71.84	\$11.49	\$15.57	\$8.02	\$0.00	\$106.92

Appro	entice: TERRAZZ	O FINISHERS					
Effect	tive Date: 2/1/2025						
Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	\$32.37	\$11.49	\$15.57	\$8.02	\$0.00	\$67.45
2	60.00	\$38.84	\$11.49	\$15.57	\$8.02	\$0.00	\$73.92
3	70.00	\$45.32	\$11.49	\$15.57	\$8.02	\$0.00	\$80.40
4	80.00	\$51.79	\$11.49	\$15.57	\$8.02	\$0.00	\$86.87
5	90.00	\$58.27	\$11.49	\$15.57	\$8.02	\$0.00	\$93.35

	Appro	entice: TERRAZ	ZZO FINISHERS						
	Effect	ive Date: 8/1/202	25						
	Step	Percent	Apprentice Base Wage	I	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	1	50.00	\$33.45	5	\$11.49	\$15.57	\$8.02	\$0.00	\$68.53
	2	60.00	\$40.13	9	\$11.49	\$15.57	\$8.02	\$0.00	\$75.21
	3	70.00	\$46.82	9	\$11.49	\$15.57	\$8.02	\$0.00	\$81.90
	4	80.00	\$53.51	5	\$11.49	\$15.57	\$8.02	\$0.00	\$88.59
	5	90.00	\$60.20		\$11.49	\$15.57	\$8.02	\$0.00	\$95.28
TEST BORING DRILLER			6/1/2025	\$51.70	\$9.90	\$9.25	\$9.80	\$0.00	\$80.65
LABORERS LABORERS - FOUNDATION AND MARI	NE		12/1/2025	\$53.20	\$9.90	\$9.25	\$9.80	\$0.00	\$82.15
LABORERS - TOURDATION AND MAKE	INL		6/1/2026	\$54.75	\$9.90	\$9.25	\$9.80	\$0.00	\$83.70
			12/1/2026	\$56.25	\$9.90	\$9.25	\$9.80	\$0.00	\$85.20
For apprentice rates see "Apprentice- LABO	RER"								
TEST BORING DRILLER HELPER			6/1/2025	\$47.82	\$9.90	\$9.25	\$9.80	\$0.00	\$76.77
LABORERS FOLINDATION AND MARI	NIE		12/1/2025	\$49.32	\$9.90	\$9.25	\$9.80	\$0.00	\$78.27
LABORERS - FOUNDATION AND MARI	NE		6/1/2026	\$50.87	\$9.90	\$9.25	\$9.80	\$0.00	\$79.82

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"	12/1/2026	\$52.37	\$9.90	\$9.25	\$9.80	\$0.00	\$81.32
TEST BORING LABORER	6/1/2025	\$47.70	\$9.90	\$9.25	\$9.80	\$0.00	\$76.65
LABORERS	12/1/2025	\$49.20	\$9.90	\$9.25	\$9.80	\$0.00	\$78.15
LABORERS - FOUNDATION AND MARINE	6/1/2026	\$49.20 \$50.75	\$9.90 \$9.90	\$9.25	\$9.80	\$0.00	\$79.70
	12/1/2026	\$50.75 \$52.25	\$9.90	\$9.25	\$9.80	\$0.00	\$81.20
For apprentice rates see "Apprentice- LABORER"	12/1/2020	ψ32.23	ψο	Ψ).23	Ψ2.00	ψ0.00	ψ01.20
TRACTORS/PORTABLE STEAM GENERATORS	6/1/2025	\$57.68	\$15.55	\$13.25	\$3.25	\$0.00	\$89.73
OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.12	\$15.55	\$13.25	\$3.25	\$0.00	\$91.17
OPERATING ENGINEERS LOCAL 4	6/1/2026	\$60.40	\$15.55	\$13.25	\$3.25	\$0.00	\$92.45
	12/1/2026	\$61.84	\$15.55	\$13.25	\$3.25	\$0.00	\$93.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
TRAILERS FOR EARTH MOVING EQUIPMENT	6/1/2025	\$41.82	\$15.57	\$20.17	\$0.00	\$0.00	\$77.56
TEAMSTERS JOINT COUNCIL NO. 10	12/1/2025	\$41.82	\$15.57	\$21.78	\$0.00	\$0.00	\$79.17
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2026	\$41.82	\$16.17	\$21.78	\$0.00	\$0.00	\$79.77
	6/1/2026	\$42.82	\$16.17	\$21.78	\$0.00	\$0.00	\$80.77
	12/1/2026	\$42.82	\$16.17	\$23.52	\$0.00	\$0.00	\$82.51
	1/1/2027	\$42.82	\$16.77	\$23.52	\$0.00	\$0.00	\$83.11
TUNNEL WORK - COMPRESSED AIR	6/1/2025	\$59.93	\$9.90	\$9.25	\$10.25	\$0.00	\$89.33
ABORERS (COMPRESSED AIR)	12/1/2025	\$61.43	\$9.90	\$9.25	\$10.25	\$0.00	\$90.83
	6/1/2026	\$62.98	\$9.90	\$9.25	\$10.25	\$0.00	\$92.38
	12/1/2026	\$64.48	\$9.90	\$9.25	\$10.25	\$0.00	\$93.88
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE)	6/1/2025	\$61.93	\$9.90	\$9.25	\$10.25	\$0.00	\$91.33
LABORERS (COMPRESSED AIR)	12/1/2025	\$63.43	\$9.90	\$9.25	\$10.25	\$0.00	\$92.83
LABORERS (COMPRESSED AIR)	6/1/2026	\$64.98	\$9.90	\$9.25	\$10.25	\$0.00	\$94.38
	12/1/2026	\$66.48	\$9.90	\$9.25	\$10.25	\$0.00	\$95.88
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - FREE AIR	6/1/2025	\$52.00	\$9.90	\$9.25	\$10.25	\$0.00	\$81.40
LABORERS	12/1/2025	\$53.50	\$9.90	\$9.25	\$10.25	\$0.00	\$82.90
LABORERS (FREE AIR TUNNEL)	6/1/2026	\$55.05	\$9.90	\$9.25	\$10.25	\$0.00	\$84.45
	12/1/2026	\$56.55	\$9.90	\$9.25	\$10.25	\$0.00	\$85.95
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - FREE AIR (HAZ. WASTE)	6/1/2025	\$54.00	\$9.90	\$9.25	\$10.25	\$0.00	\$83.40
LABORERS LABORERS (FREE AIR TUNNEL)	12/1/2025	\$55.50	\$9.90	\$9.25	\$10.25	\$0.00	\$84.90
LADOKEKO (FREE AIR TONNEE)	6/1/2026	\$57.05	\$9.90	\$9.25	\$10.25	\$0.00	\$86.45
	12/1/2026	\$58.55	\$9.90	\$9.25	\$10.25	\$0.00	\$87.95
For apprentice rates see "Apprentice- LABORER"							
VAC-HAUL	6/1/2025	\$41.24	\$15.57	\$20.17	\$0.00	\$0.00	\$76.98
TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	12/1/2025	\$41.24	\$15.57	\$21.78	\$0.00	\$0.00	\$78.59
	1/1/2026	\$41.24	\$16.17	\$21.78	\$0.00	\$0.00	\$79.19
	6/1/2026	\$42.24	\$16.17	\$21.78	\$0.00	\$0.00	\$80.19

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	12/1/2026	\$42.24	\$16.17	\$23.52	\$0.00	\$0.00	\$81.93
	1/1/2027	\$42.24	\$16.77	\$23.52	\$0.00	\$0.00	\$82.53
VOICE-DATA-VIDEO TECHNICIAN	9/1/2024	\$35.29	\$13.99	\$13.69	\$3.88	\$0.00	\$66.85
ELECTRICIANS LOCAL 96 ELECTRICIANS LOCAL 96	9/7/2025	\$36.12	\$14.98	\$13.94	\$3.97	\$0.00	\$69.01
ELLE INCIANS LOCAL 70	9/6/2026	\$37.04	\$15.96	\$14.20	\$4.07	\$0.00	\$71.27

Appro	Apprentice: VOICE-DATA-VIDEO TECHNICIAN							
Effect	ive Date: 9/1/2024							
	_	Apprentice				Supplemental	Total	
Step	Percent	Base Wage	Health	Pension	Annuity	Unemployment	Rate	
1	50.00	\$17.65	\$13.99	\$0.53	\$3.88	\$0.00	\$36.05	
2	55.00	\$19.41	\$13.99	\$0.58	\$3.88	\$0.00	\$37.86	
3	60.00	\$21.17	\$13.99	\$13.27	\$3.88	\$0.00	\$52.31	
4	65.00	\$22.94	\$13.99	\$13.32	\$3.88	\$0.00	\$54.13	
5	70.00	\$24.70	\$13.99	\$13.37	\$3.88	\$0.00	\$55.94	
6	75.00	\$26.47	\$13.99	\$13.42	\$3.88	\$0.00	\$57.76	
7	80.00	\$28.23	\$13.99	\$13.48	\$3.88	\$0.00	\$59.58	
8	85.00	\$30.00	\$13.99	\$13.53	\$3.88	\$0.00	\$61.40	

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Tot Ra
1	50.00	\$18.06	\$14.98	\$0.54	\$3.97	\$0.00	\$37.:
2	55.00	\$19.87	\$14.98	\$0.60	\$3.97	\$0.00	\$39.
3	60.00	\$21.67	\$14.98	\$13.51	\$3.97	\$0.00	\$54.
4	65.00	\$23.48	\$14.98	\$13.56	\$3.97	\$0.00	\$55.
5	70.00	\$25.28	\$14.98	\$13.62	\$3.97	\$0.00	\$57.
6	75.00	\$27.09	\$14.98	\$13.67	\$3.97	\$0.00	\$59.
7	80.00	\$28.90	\$14.98	\$13.73	\$3.97	\$0.00	\$61.
8	85.00	\$30.70	\$14.98	\$13.78	\$3.97	\$0.00	\$63.

WAGON DRILL OPERATOR	6/1/2025	\$42.00	\$9.65	\$9.00	\$8.70	\$0.00	\$69.35
LABORERS LABORERS - ZONE 2	12/1/2025	\$43.38	\$9.65	\$9.00	\$8.70	\$0.00	\$70.73
LABORERS - ZONE 2	6/1/2026	\$44.82	\$9.65	\$9.00	\$8.70	\$0.00	\$72.17
	12/1/2026	\$46.26	\$9.65	\$9.00	\$8.70	\$0.00	\$73.61
	6/1/2027	\$47.71	\$9.65	\$9.00	\$8.70	\$0.00	\$75.06
	12/1/2027	\$49.16	\$9.65	\$9.00	\$8.70	\$0.00	\$76.51
	6/1/2028	\$50.66	\$9.65	\$9.00	\$8.70	\$0.00	\$78.01
	12/1/2028	\$52.16	\$9.65	\$9.00	\$8.70	\$0.00	\$79.51
For apprentice rates see "Apprentice- LABORER"							
WAGON DRILL OPERATOR (HEAVY & HIGHWAY)	6/1/2025	\$40.59	\$9.90	\$9.25	\$9.21	\$0.00	\$68.95
LABORERS	12/1/2025	\$41.97	\$9.90	\$9.25	\$9.21	\$0.00	\$70.33
LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	\$43.41	\$9.90	\$9.25	\$9.21	\$0.00	\$71.77
	12/1/2026	\$44.85	\$9.90	\$9.25	\$9.21	\$0.00	\$73.21

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER (Heavy and Highway	7)						
WASTE WATER PUMP OPERATOR	6/1/2025	\$58.33	\$15.55	\$13.25	\$3.25	\$0.00	\$90.38
OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2025	\$59.78	\$15.55	\$13.25	\$3.25	\$0.00	\$91.83
OFERATING ENGINEERS LOCAL 4	6/1/2026	\$61.08	\$15.55	\$13.25	\$3.25	\$0.00	\$93.13
	12/1/2026	\$62.53	\$15.55	\$13.25	\$3.25	\$0.00	\$94.58
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
WATER METER INSTALLER	3/1/2025	\$55.00	\$11.30	\$9.71	\$8.06	\$0.00	\$84.07
PLUMBERS LOCAL 4 PLUMBERS LOCAL 4	9/1/2025	\$56.40	\$11.30	\$9.71	\$8.06	\$0.00	\$85.47
FLUMDERS LOCAL 4	3/1/2026	\$57.80	\$11.30	\$9.71	\$8.06	\$0.00	\$86.87

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

#### **Additional Apprentice Information**

Issue Date: 07/14/2025

All apprentices must be registered with the Division of Apprenticeship Training(DAS) in accordance with M.G.L.c. 23, §§ 11E-11L. Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the hourly prevailing wage rate established by the Commissioner under the provisions of M.G.L.c. 149, §§ 26-27D.

Apprentice ratios are established by DAS pursuant to M.G.L.c. 23, §§ 11E-11L. Ratios are expressed as the allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified. The ratios listed herein have been taken from relevant private collective bargaining agreements(CBAs) and are provided for illustrative purposes only. They have not been independently verified as being accurate or continuing to be accurate.

Parties having questions regarding what ratio to use should contact DAS.

# MINORITY/WOMEN BUSINESS ENTERPRISE and WORKER UTILIZATION PROGRAM

# BIDDERS MUST COMPLETE AND SUBMIT FORM E00-101 WHICH IS PART OF THE BID SUBMISSION

INCLUDED IN THIS SECTION ARE COPIES OF THE AGREEMENT BETWEEN THE CITY AND THE MASSACHUSETTS COMMISSION AGAINST DISCRIMINATION WHICH GOVERN THE ACTIVITIES ADDRESSED BY THE E00-101 FORM.

Direct any questions about these forms and procedures to:

Purchasing Division City Hall – Room 201 455 Main Street Worcester, MA 01608 (508) 799-1220

purchasing@worcesterma.gov

#### CITY OF WORCESTER

# MINORITY/WOMEN BUSINESS ENTERPRISE AND WORKER UTILIZATION PROGRAM

## AFFIDAVIT OF ACKNOWLEDGEMENT and CERTIFICATE OF COMPLIANCE

Form E00-101

#### TO ALL CONTRACTORS:

General Bidders and Filed Subbidders shall complete and submit this form as part of their bid. Non-Filed Subcontractors shall complete and submit this form to the General Contractor before beginning work.

# I. THE MINORITY AND WOMEN BUSINESS AND UTILIZATION PROGRAMS

Pursuant to an agreement between the City of Worcester and the Commonwealth of Massachusetts, during the performance of any contract with the City of Worcester, all Contractors, Filed Subcontractors, and Subcontractors are bound by the obligations of the Supplemental Equal Employment Opportunity Anti-Discrimination and Affirmative Action Program. All contractors and subcontractors if subcontracting any portion of the work are obligated to make a good faith effort to engage 10% minority and 15% women owned businesses. Further, each contractor shall make a good faith effort to maintain a workforce that is 38% people of color and 10% women.

The undersigned hereby certifies that he/she is familiar with the provisions of The Supplemental Equal Employment Opportunity Anti-Discrimination and Affirmative Action Programs and agrees to adhere to the provisions therein.

II. This contractor <b>IS</b> $\square$ <b>or IS NOT</b> $\square$ certified by the State Office of and Women Business Assistance to be a minority or women owned and business; and				
III.	WILL $\square$ or WILL NOT	□ subcontract any portion of this contract.		
Project Name:		Bid Number:		
Authorized Si	gnature	Business Name		
Title		Address		
Date				

# MINORITY/WOMEN BUSINESS ENTERPRISE AND WORKER UTILIZATION PROGRAM

**FORM EOO-D/102** 

## **BIDDERS INFORMATION ON PROCEDURES AND FORMS**

To make all contractors aware of their obligation to follow certain procedures and file appropriate reports pertaining to those procedures, the following is an outline of Minority/Women Business Enterprise and Worker Utilization Program. Also included here is the Affidavit of Acknowledgement and Certification of Compliance, Form E00-101. This form is to be completed and filed as part of your bid.

The following documents are included in this bid:

# 1. <u>AFFIDAVIT OF ACKNOWLEDGEMENT AND CERTIFICATION OF COMPLIANCE</u>, E00-101

This form is to be completed by all General Contractors and Filed Subcontractors and submitted as part of their bid on all City of Worcester construction projects.

# 2. <u>SUPPLEMENTAL EQUAL EMPLOYMENT OPPORTUNITY ANTI-DISCRIMINATION AND AFFIRMATIVE ACTION PROGRAM</u> E00-D/3

The agreement between the City of Worcester and the Massachusetts Commission Against Discrimination establishing the goals and procedures for the utilization of minority and women owned businesses and minority and women workers on City Construction projects.

# 3. <u>SUCCESSFUL BIDDER'S OBLIGATION TO PROCEDURES AND FORMS, EE0-D/103</u>

This is a listing of the procedures and forms that will be provided to the successful bidder for use prior to beginning work and at various times throughout the life of the project.

#### THE COMMONWEALTH OF MASSACHUSETTS

**FORM E00-D/3** 

#### THE CITY OF WORCESTER

# SUPPLEMENTAL EQUAL EMPLOYMENT OPPORTUNITY ANTI-DISCRIMINATION AND AFFIRMATIVE ACTION PROGRAM

#### I. AGREEMENT

During the performance of this contract, the Contractor or Filed Subcontractor and all subcontractors (herein collectively referred to as the Contractor), for himself/herself, his/her assignees, and successors in interest, agree as follows:

- 1. In conjunction with the performance of work under this contract, the contractor shall not discriminate against any employee or applicant for employment because of race, color, religious creed, national origin, age, sex, or handicap. The aforesaid provision shall include, but not be limited to, the following: employment upgrading, demotion, or transfer; recruitment advertising; layoff; termination, rates of pay or other forms of compensation; conditions or privileges of employment; and selection for apprenticeship. The contractor shall post hereafter in a conspicuous place, available to employees and applicants for employment, notices to be provided by the Commission setting forth the provisions of the Fair Employment Practices Law of the Commonwealth (M.G.L. Chapter 151 B).
- 2. In connection with the performance of work under this contract, the Contractor shall undertake in good faith affirmative action measures designed to eliminate any discriminatory barriers in the terms and conditions of employment on the grounds of race, color, religious creed, national origin, age, sex, or handicap, and to eliminate and remedy any effects of such discrimination in the past. Such affirmative action shall entail positive and aggressive measures to ensure equal opportunity in the areas of apprenticeship training programs. This affirmative action shall include all action required to guarantee equal employment opportunity for all persons, regardless of race, color, religious creed, national origin, age, sex, or handicap. The purpose of this provision is to ensure to the fullest extent possible an adequate supply of skilled tradesmen for this and future City public construction project.

#### II. OBLIGATION

1. As part of the obligation of remedial action under the foregoing section, the Contractor shall maintain goals on this project no less than 38 percent (38%) people of color employee and 10 percent (10%) women employee hours of the total work hours in each job category including but not limited to, bricklayers, carpenters, cement masons, electricians, iron workers, operating engineers, and those "classes of work" enumerated in section 44C of chapter 149 of the Massachusetts General Laws.

In the hiring of minority and women journeymen, apprentices, trainees and advanced trainees, the Contractor shall rely on referrals from a multi-employer affirmative action program approved by the City, traditional referral methods utilized by the construction industry, and referrals from agencies, not more than three in number at any one time, designated by the City.

#### III. REPORTS

- 1. Contractor shall prepare projected manning tables on a quarterly basis, **Quarterly Projected Workforce Table, E00-105.** These shall be broken down into projections by week, for workers required in each trade. Copies shall be furnished to the City one week in advance of the commencement of the period covered, and at such time as there is a need to be updated during the period.
- 2. Records of employment referral orders, prepared by the Contractor, shall be made available to the City on request.
- 3. The Contractor shall prepare the **Certified Payroll Report on a weekly basis**, which lists the hours worked in each trade by each employee identified as minority, non-minority, male and female. Copies of these shall be provided to the City at the end of each week.

#### IV. SUBCONTRACTING WORK

If the Contractor shall use any Subcontractor on any work performed under this contract, affirmative action shall be taken to negotiate with qualified minority and women contractors. This affirmative action shall cover both pre-bid and post-bid periods.

#### V. EMPLOYMENT

In the employment of journeymen, apprentices, trainees, and advanced trainees, the Contractor shall give preference, first to citizens of the Commonwealth who have served in the armed forces of the United States in time of war and have been honorably discharged therefrom or released from active duty therein, and who are qualified to perform the work to which the employment relates, and , secondly, to citizens of the Commonwealth generally, and, if such cannot be obtained in sufficient numbers, then to citizens of the United States.

#### VI. RIGHT OF ACCESS

A designee of the City shall have the right of access to the construction site.

#### VII. COMPLIANCE WITH REQUIREMENTS

The contractor shall comply with the provisions of Executive Order No. 227 amending and revising Executive Order No. 74, as amended by executive Order No. 16 dated May 1, 1975 and of Chapter 151B as amended, of the Massachusetts General Laws, both of which are herein incorporated by reference and made part of this contract.

#### VIII. NON-DISCRIMINATION

The Contractor, in the performance of all work after the award, and prior to completion of the contract work, will not discriminate on the grounds of race, color, religious creed, national origin, age, sex, or handicap in employment practices, in the selection or retention of other contractors or in the procurement of materials and rentals of equipment.

# IX. SOLICITATIONS FOR SUBCONTRACTORS, AND FOR THE PROCUREMENT OF MATERIALS AND EQUIPMENT

In all solicitations either by competitive bidding or negotiation made by the Contractor either for work to be performed under a subcontract or for the procurement of materials or supplies, each entity solicited shall be notified in writing by the contractor of the

Contractor's obligation under this contract relative to non-discrimination and affirmative action.

## X. CONTRACTOR'S CERTIFICATION

Contractors bidding as General Contractors or Filed Sub-contractors shall certify that they will comply with the minority and women manpower and business enterprise goals and specific affirmative action steps contained in this Supplemental Equal Employment Opportunity Anti-Discrimination and Affirmative Action Program by signing and submitting with the bid the Affidavit of Acknowledgement and Certification of Compliance, Form E00-101.

If any Contractor subcontracts any portion of the work, the Contractor is required to obtain from each Subcontractor, regardless of tier, an Affidavit of Acknowledgement and Certification of Compliance, Form E00-101 stating that it will comply with the minority and women subcontracting and manpower ratios and specific affirmative action steps contained in this Supplemental Equal Employment Opportunity Anti-Discrimination and Affirmative Action Program by signing this form and submitting it to the Contractor for submission to the awarding authority not later than five working days following the opening of the bids.

### XI. COMPLIANCE – INFORMATION, REPORTS, AND SANCTIONS

- 1. The Contractor will provide all information and reports required by the City on instructions issued and will permit access to its facilities and any books, records, accounts and other sources of information which may be determined by the City to affect the employment of personnel. This provision shall apply only to information pertinent to the City's supplementary affirmative action contract requirements. Where information required is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to the City and shall set forth what efforts have been made to obtain the information.
- 2. Whenever the City believes the Contractor may not be operating in compliance with the terms of this Section, the City directly, or through its designated agent, shall conduct an appropriate investigation, and confer with the parties, to determine if such Contractor is operating in compliance with the terms of this Section. If the City or its agent finds the Contractor not in compliance, it shall make a preliminary report of non-compliance and notify such Contractor in writing of such steps as will in the judgment of the City or its agent bring such Contractor into compliance. In the event that such Contractor fails or refuses to fully perform such steps, the City shall make a final report of non-compliance, and recommend the imposition of one or more of the sanctions listed below. If, however, the City believes the Contractor has taken or is taking every possible measure to achieve compliance, it shall not make final a report on non-compliance. Within fourteen (14) days of the receipt of the recommendations of the City, the administering agency shall move to impose one or more of the following sanctions, as it may deem appropriate to attain full and effective enforcement.
  - a. The recovery by the administering agency from the Contractor of 1/10 of 1% of the contract award price or \$1000.00, whichever sum is greater, in the nature of liquidated damages or, if a Subcontractor is in non-compliance, the recovery by the administering agency from the Contractor as a back charge against the Subcontractor of 1/10 of 1% of the subcontract price, or \$400.00, whichever sum

is greater, in the nature of liquidated damages, for each week that such party fails or refuses to comply;

- b. The suspension of any payment or part thereof due under the contract until such time as the Contractor or any Subcontractor is able to demonstrate compliance with the terms of the contract;
- c. The termination, or cancellation, of the contract, in whole or in part, unless the Contractor is able to demonstrate within a specified time his compliance with the terms of the contract;
- d. The denial to the Contractor of the right to participate in any further contracts awarded by the administering agency for a period of up to three years.
- 3. If at any time after the imposition of one or more of the above sanctions a Contractor is able to demonstrate that he/she is in compliance with this section, he/she may request the administering agency in consultation with the City, to suspend the sanctions conditionally, pending a final determination by the City as to whether the contractor is in compliance. Upon final determination, based on the recommendations of the adjudicatory body, the City shall either lift the sanctions or reimpose them.
- 4. Sanctions enumerated under Section XII-2 shall not be imposed except after an adjudicatory proceeding, as that term is used in M.G.L. Chapter 30, has been conducted. No investigation by the City or its agent shall be initiated without prior notice to the Contractor.

#### XII. SEVERABILITY

The provisions of this Section are severable, and if any of these provisions shall be held unconstitutional by any court of competent jurisdiction, the decisions of such court shall not affect or impair any of the remaining provisions.

## XIII. WAIVER

The City of Worcester reserves the right to waive any stipulation in the M/WBE Program when deemed necessary or appropriate for the general good of the City and its programs.

#### **DEFINITIONS**

Contractor Except where otherwise specifically stated the term "Contractor" shall mean any General Contractor, Filed Subcontractor or Non-Filed Subcontractor.

City is the City of Worcester, Massachusetts

M/WBE is Minority and Women Business Enterprise as certified by the State Office of Minority and Women Business Assistance to be 51% or more minority or women owned and operated.

# MINORITY/WOMEN BUSINESS ENTERPRISE AND WORKER UTILIZATION PROGRAMS

FORM E00-D/103

### SUCCESSFUL BIDDER'S OBLIGATION TO PROCEDURES AND FORMS

All successful bidders on City of Worcester construction projects will receive a package of procedures and forms that are to be used at specific times throughout the life of the project.

The following is a list of the documents that will be sent to successful bidders when this office is notified that a contract has been, or is about to be, executed.

### I. BUILDING TRADES – CONTACT LIST, E00-D/6

When a contractor cannot fulfill the worker utilization percentages, the appropriate building trades locals may be contacted to request assistance in locating and engaging qualified workers.

# II. <u>AFFIDAVIT OF ACKNOWLEDGEMENT and CERTIFICATION OF</u> <u>COMPLIANCE, (FOR SUBCONTRACTORS)</u>, E00-101

If any portion of a project is to be subcontracted at any tier, each additional subcontractor shall complete this form and send it to the Contract Compliance Office within two business days of contract execution and <u>PRIOR</u> to beginning work on the project.

## III. TABLE OF PROJECTED SUBCONTRACTORS, E00-103

The use of subcontractors at any tier shall be reported to the Contract Compliance Office on this form prior to the subcontractor beginning work on the project.

# IV. <u>SUBCONTRACTOR'S CERTIFICATE OF INTENT TO PARTICIPATE</u>, E00-104

Each Non-Filed subcontractor engaged to work on a project shall complete and forward this form to the Contract Compliance Office prior to beginning work on the project.

#### V. QUARTERLY PROJECTED WORKFORCE TABLE, E00-105

Each General Contractor, Filed Subcontractor and Non-Filed Subcontractor, regardless of tier, shall complete and forward this form to the Contract Compliance Office prior to beginning work and again for each additional three month period throughout the life of the project.

## VI. REQUEST FOR MODIFICATION

E00-106B, MINORITY AND WOMEN BUSINESS UTILIZATION E00-106C, MINORITY AND WOMEN UTILIZATION IN THE WORK FORCE

Any General Contractor, Filed Subcontractor or Non-Filed Subcontractor, regardless of tier, not meeting the minority and women goals, may file a request for modification after having exhausted all possible sources. Requests for modification are considered <u>ONLY</u> after attempts to fulfill these mandates have been documented and submitted to the Contract Compliance Office with the appropriate sections of this form.

A modification or waiver will not be granted because a contractor wishes to use an existing workforce that does not achieve the goals of 38% of total work hours to be worked by people of color and 10% of total work hours to be worked by women; and,

If subcontracting, does not meet the goals of 10% of the contract value for Minority Business Enterprises and 15% of the contract value to Women Business Enterprises.

# VII. WEEKLY PAYROLL REPORT FORM & STATEMENT OF COMPLIANCE

At the end of each week of work, all Contractors, Filed Subcontractors, and Non-Filed Subcontractors, regardless of tier, shall complete and submit these forms to the Contract Compliance Office.

The Contract Compliance Office will also accept computer generated payroll reports. However, if the computer payroll does not reflect the prevailing wage, the Contractor must provide a breakdown of the benefits paid to each employee which, when added to the base wage, equals the prevailing wage.

The City of Worcester regards the monitoring of weekly certified payroll reports to be a most important function. Therefore, all certified payroll reports shall be scrutinized by the Contract Compliance Office and any violations of the Commonwealth's prevailing wage law will be vigorously enforced.

### CORI COMPLIANCE / GENDER IDENTITY & EXPRESSION

All Vandors must shook and of the three lines below

Vendors entering into contracts with the City of Worcester must affirm that their policies regarding CORI information are consistent with the CORI hiring standards set by the City of Worcester. The City's CORI hiring policy may be downloaded from City of Worcester website <a href="https://www.worcesterma.gov">www.worcesterma.gov</a>. Questions pertaining to the City's CORI hiring policy are to be directed to the Equal Employment Opportunity Officer, Executive Office of Human Resources at <a href="https://worcesterma.gov">hr@worcesterma.gov</a>

#### **CERTIFICATION**

An vendors must eneck one of the times below.
1 CORI checks are not performed on any Applicants.
2 CORI checks are performed on some or all Applicants. The Vendor, by affixing a signature below, affirms under penalties of perjury that its CORI policy is consistent with the standards set forth with the CORI hiring standards set by the City of Worcester.
CORI checks are performed on some or all Applicants. The Vendor's CORI policy is not consistent with the standards set forth with the CORI hiring standards set by the City of Worcester. (a copy of the Vendor's written CORI policy must accompany this form).
(Typed or printed name of person Signature signing quotation, bid or proposal)
Name of Business
A Vendor with a CORI policy that does NOT conform to the City standards must check Line 3. Vendors who check Line 3 will not be permitted to enter into contracts with the City, absent a waiver granted by the City. For any waiver to be granted, a written request should accompany bid submission explaining in detail why the vendor fails or refuses to comply with the City's CORI hiring standards.

#### **Gender Identity Standards Applicable to Vendors**

The city will do business only with vendors that have adopted and employ Gender Identity policies, practices and standards that are consistent with city standards.

The city may review all vendors' Gender Identity policies and practices for consistency with city standards.

By signing this bid, vendor confirms that their Gender Identity policies, practices and standards are consistent with those of the City of Worcester. For further information please refer to the Ordinance Relative to Gender Identity and Expression found at <a href="www.worcesterma.gov">www.worcesterma.gov</a> or call the LGBTQ Liaison/Director of Human Rights & Disabilities at 508-799-8486.

## CITY OF WORCESTER MINORITY AND WOMEN BUSINESS ENTERPRISE PROGRAM

VENDOR/SERVICE PROVIDER CERTIF	VENDOR/SERVICE PROVIDER CERTIFICATION				
TO BE AWARDED A VENDOR/SERVICE CONTRACT, ALL PARTS OF THIS FORM THAT APPLY TO YOUR BID MUST BE COMPLETED AND SUBMITTED WITH YOUR BID.					
Bidder is a Minority Business Enterprise (MBE) - see reverse for definition Yes No					
Bidder is a Woman Business Enterprise (WBE) - see reverse for definit	ion Yes No				
<u>IF SUBCONTRACTING</u> any portion of the service covered by this bid, the successful bidder shall demonstrate a good faith effort to seek and use TEN PERCENT (10%) Minority and FIFTEEN PERCENT (15%) Women-owned Businesses.					
A. YOUR INTENT TO SUBCONTRACT. CHECK ( ✔ ) THE	E APPROPRIATE BOX:				
No work will be subcontracted. Complete Section "C" only.  Some work will be subcontracted. Complete Section "B" and "C"					
B. LIST SUBCONTRACTORS Engaged to do any portion of this Bid.					
Check (✔) the appropriate box and give complete information.					
☐ MBE ☐ WBE ☐ OTHER					
Firm Name:					
Street Address:					
City/State/Zip					
Work subcontracted:	Dollar Value \$				
Check ( ✓ ) the appropriate box and give complete information.					
□MBE □WBE □ OTHER					
Firm Name:					
Street Address:					
City/State/Zip					
Work subcontracted:	Dollar Value \$				
C ITEM/CEDVICE DID ON.	NO.				
C. ITEM/SERVICE BID ON:BID	NU.:				
Firm Name:					
Street Address:					

City/State/Zip

### For purposes of the City's classification and reporting program, the following definitions apply:

Minority Business Enterprise (MBE) – a for profit enterprise, regardless of size, physically located in the United States or its trust territories, which is owned, operated and controlled by minority group members. "Minority group members" are U.S. citizens who are African-American, Latin American, Native American, Asian-Pacific American and Asian-Indian American. "Ownership" by minority individuals means the business is at least 51% owned by such individuals or, in the case of a publicly owned business, at least 51% of the stock is owned by one or more such individuals. Further, those minority group members control the management and daily business operations.

Women Business Enterprise (WBE) – a for profit enterprise, regardless of size, physically located in the United States or its trust territories, which is owned, operated and controlled by women group members. "Ownership" by women means the business is at least 51% owned by women or, in the case of a publicly owned business, at least 51% of the stock is owned by one or more women. Further, those women group members control the management and daily business operations.

WORCESTER the Massachusetts Revenue Entrequires that the following be supplied with you	Forcement and Protection Program of 1983
DATE:	
Pursuant to Mass. G.L. Ch. 62C, Section 49A, I, to my best knowledge and belief, have filed paid all Massachusetts State and City Taxes required.	all Massachusetts State Tax Returns and
COMPANY NAME:	
STREET ADDRESS:	
CITY OR TOWN:	
STATE:	ZIP CODE:
TELEPHONE NO.:	FAX NO.
SOCIAL SECURITY OR FEDERAL IDENTII	FICATION NO.:
AUTHORIZED SIGNATURE:	

FAILURE TO COMPLETE THIS FORM MAY RESULT IN REJECTION OF BID AND/OR REMOVAL FROM CITY BID LIST.

#### RIGHT TO KNOW

Any vendor who receives an order or orders resulting from this invitation agrees to submit a Material Safety Data Sheet (MSDS) for each toxic or hazardous substance or mixture containing such substance, pursuant to M.G.L. C111f 228, 9 and 10 and the regulations contained in 441 CMR SS21.06 when deliveries are made. The vendor agrees to deliver all containers properly labeled pursuant to M.G.L. C111F S7 and the regulation contained in 441 CMR S21-05. Failure to submit a MSDS and/or labels on each container will place the vendor in noncompliance with the purchase order and/or contract. Failure to furnish MSDS's and/or labels on each container may result in Civil or Criminal penalties, including bid debarment and action to prevent the vendor from selling said substances, or mixtures containing said substances within the Commonwealth. All vendors furnishing substances or mixtures subject to Chapter 1.1F or M.G.L. are cautioned to obtain and read the law and rules and Regulations referenced above. Copies can be obtained from the State House Book Store, Secretary of State, State House, Room 117, Boston, MA (617) 727-2834 for \$2.00 plus \$.65 postage. In addition, copy of "Right to Know" law is available in Purchasing Department for review.

# WAGE THEFT PREVENTION CERTIFICATION

By the Revised Ordinances, Chapter 2, Section 39, the city of Worcester has established requirements for certain contracts in an effort to prevent wage theft. Prospective contractors must provide the following certification and disclosures with their bids/proposals. The City will not award a contract without receipt of this completed certification.

**INSTRUCTIONS**: A prospective contractor shall (a) check Box 1 *OR* Box 2, as applicable, (b) check Boxes 3-5, (c) sign this form certifying compliance with the Wage Theft Prevention Ordinance, and (d) submit the completed form with its bid/proposal. For multi-year contracts, the successful bidder/proposer shall submit the completed form annually to the Purchasing Director.

Pursuant to the Wage Theft Prevention Ordinance, successful bidders/proposals shall post in conspicuous places the Mass.

Wage and Hour Laws notice informing employees of the protections of G.L. c. 149, Sec. 151, and the Fair Labor Standards Act (FLSA). The notice may be found at <a href="http://www.mass.gov/ago/docs/workplace/wage/wagehourposter.pdf">http://www.mass.gov/ago/docs/workplace/wage/wagehourposter.pdf</a>
ALL BIDDERS/PROPOSERS MUST CERTIFY THAT [check either Box 1 or Box 2, as applicable]
1. Neither this vendor/contractor nor any prospective subcontractor has been subject to a federal or state criminal or civil judgment, administrative citation, final administrative determination, order or debarment resulting from a violation of G.L. c. 149, G.L. c. 151, or FLSA, within three (3) years prior to the date of this bid/proposal submission.
OR
2. This vendor/contractor, or a prospective subcontractor, has been subject to a federal or state criminal or civil judgment, administrative citation, final administrative determination, or debarment resulting from a violation of G.L. c. 149, G.L. c. 151, or FLSA, within three (3) years prior to the date of this bid/proposal submission. The firm <a href="mailto:shall">shall</a> provide a copy of the same with the bid/proposal.
ALL BIDDERS/PROPOSERS MUST CERTIFY EACH OF THE FOLLOWING
3. Within five (5) days of receiving notice, the vendor/contractor shall report and provide a copy of any federal or state criminal or civil judgment, administrative citation, final administrative determination, order or debarment resulting from a violation of G.L. c. 149, G.L. c. 151, or FLSA imposed on this firm or on any prospective subcontractor while any bid/proposal to the City is pending and, if awarded a contract, during the term of the contract provide the same to the Purchasing Director.  4. A vendor/contractor awarded a contract that has disclosed under paragraph 3 above shall, upon request, furnish monthly certified payrolls for the City contract as the Purchasing Director instructs and shall, at the discretion of the Purchasing Director, obtain a wage/payment bond or other suitable insurance as required by the Wage Theft Prevention Ordinance. Vendors/contractors subject to a state or federal debarment for violation of the above laws or prohibited from contracting with the Commonwealth are prohibited from contracting with the City, and upon a finding or order of debarment or prohibition, the City may terminate the contract.
debarment of promotion, the City may terminate the contract.
5. The contractor shall post notices provided by the City in conspicuous places informing employees of the protections of the Wage Theft Prevention Ordinance, and applicable local, state and federal law.
The undersigned certifies under the pains and penalties of perjury that the contractor is in compliance and agrees to remain in compliance with the provisions of the Wage Theft Prevention Ordinance for the term of its contract with the City.
Signed:

### BID ITEMS for Bid No. 8491-J6 Contract No. S25-4

ITEM NUMBER	DESCRIPTION	ESTIMATE OF QUANTITIES	COMPUTED TOTALS

THE BIDDER MUST FILL IN THESE UNIT OR LUMP SUM PRICES. The BIDDER should also carry out all extensions and fill in "Computed Totals"

(In case of error or discrepancies, UNIT OR LUMP SUM PRICES govern, and written words take precedence over figures)

	В	ASE BID		
Item 100.	Clearing and Grubbing, per acre			
		Dollars		
	and	Cents	0.1 A	\$
	(\$	)		
Item 112	Unclassified Excavation, per cubic ya	rd		
		Dollars		
	and	Cents	210 CY	\$
	(\$	)		
Item 112.2	Test Pits, per each			
		Dollars		
	and	Cents	2 EA	\$
	(\$	)		
Item 113	Tree Protection, per each			
		Dollars		
	and	Cents	5 EA	\$
	(\$	)		
Item 120	Class "B" Rock Excavation and Dispo	sal, per cubic yard.		
		Dollars		
	and	Cents	60 CY	\$
	(\$	)		

ITEM NUMBER	DESCRIPTION		ESTIMATE OF QUANTITIES	COMPUTED TOTALS
THE BIDDER MU	UST FILL IN THESE UNIT OR LUMP SUM	PRICES. The B	IDDER should also car	ry out all extensions
(In case of error or	r discrepancies, UNIT OR LUMP SUM PRIC	ES govern, and w	ritten words take prece	dence over figures)
Item 121	Trench Rock Excavation and Disposal, p	er cubic yard		
		Dollars		
	and	<u>Cents</u>	15 CY	\$
	(\$			
Item 122	Earth Excavation Below Normal Grade,	per cubic yard		
		Dollars		
	and	Cents	15 CY	\$
	(\$	)		
Item 125	Sand Borrow, per cubic yard			
		Dollars		
	and	Cents	15 CY	\$
	(\$	)		
Item 126	Gravel Borrow, per cubic yard			
		Dollars		
	and	Cents	115 CY	\$
	(\$	)		
Item 127	Dense Graded Crushed Stone, per cubic	yard		
		Dollars		
	and	Cents	40 CY	\$
	(\$	)		

ITEM NUMBER	DESCRIPTION		ESTIMATE OF QUANTITIES	COMPUTED TOTALS
THE BIDDER MU	UST FILL IN THESE UNIT OR LUMP SUM F	PRICES. The B	IDDER should also car	rry out all extensions
(In case of error or	r discrepancies, UNIT OR LUMP SUM PRICE	S govern, and w	ritten words take prece	edence over figures)
Item 128	Screened Loam Borrow, per cubic yard			
		Dollars		
	and	Cents	35 CY	\$
	(\$	)		
Item 130	Crushed Stone 3/4 Inch, per cubic yard			
		Dollars		
	and	Cents	50 CY	\$
	(\$	)		
Item 141.	Class A Trench Excavation, per cubic yard	1		
		Dollars		
	and		360 CY	\$
	(\$	)		
Item 150	Furnish and Spread Calcium Chloride, per	pound		
		Dollars		
	and	Cents	50 LB	\$
	(\$	)		
Item 156	Seeding, per square yard			
		Dollars		
	and	Cents	305 SY	\$
	(\$	)		

ITEM NUMBER	DESCRIPTI	ON	ESTIMATE OF QUANTITIES	COMPUTED TOTALS
THE BIDDER MU and fill in "Compu	UST FILL IN THESE UNIT OR LUM ted Totals"	P SUM PRICES. The B	IDDER should also ca	arry out all extensions
(In case of error or	discrepancies, UNIT OR LUMP SUM	I PRICES govern, and w	ritten words take prec	cedence over figures)
Item 160	Cleaning Up, lump sum			
		Dollars		
	and	Cents	1 LS	\$
	(\$	)		
Item 170	Comply with the Conservation Co	ommissions Order of		
		Dollars	110	¢.
	and	Cents	1 LS	\$
	(\$	)		
Item 171	Installation and Maintenance of E foot	rosion Controls, per line	ar	
		Dollars	215 LF	\$
	and	Cents	213 LI	<b>5</b>
	(\$	)		
Item 180.01	Environmental Health and Safety	Program, lump sum		
		Dollars		
	and	Cents	1 LS	\$
	(\$	)		
Item 180.02	Personal Protection Level C Upgr	rade, per hour		
		Dollars		
	and	Cents	8 HR	\$
	(\$	)		

ITEM NUMBER	DESCRIPTION		ESTIMATE OF QUANTITIES	COMPUTED TOTALS	
THE BIDDER MU	UST FILL IN THESE UNIT OR LUMP SUM	PRICES. The B	IDDER should also ca	arry out all extensions	
(In case of error or	r discrepancies, UNIT OR LUMP SUM PRICE	ES govern, and w	ritten words take prec	edence over figures)	
Item 180.03	Licensed Site Professional Services, per h	iour			
		Dollars			
	and	<u>Cents</u>	8 HR	\$	
	(\$	)			
Item 181.11	Disposal of Unregulated Soil, per ton				
		Dollars			
	and	Cents	50 TON	\$	
	(\$	)			
Item 181.12	Disposal of Regulated Soil – In-State Fac	ility, per ton			
		Dollars			
	and	Cents	50 TON	\$	
	(\$	)			
Item 181.13	Disposal of Regulated Soil – Out-of-State	Facility, per ton			
		Dollars			
	and	Cents	50 TON	\$	
	(\$	)			
Item 182.1	Inspection and Testing for Asbestos, lump sum				
		Dollars			
	and	Cents	1 LS	\$	
	(\$	)			

ITEM NUMBER	DESCR	IPTION	ESTIMATE OF QUANTITIES	COMPUTED TOTALS
THE BIDDER MU	UST FILL IN THESE UNIT OR I	LUMP SUM PRICES. The B	IDDER should also car	ry out all extensions
(In case of error or	r discrepancies, UNIT OR LUMP	SUM PRICES govern, and w	ritten words take prece	dence over figures)
Item 182.2	Removal of Asbestos, per lin	ear foot		
		Dollars		
	and	Cents	50 FT	\$
	(\$			
Item 220.12	Trench Excavation and Back PVC, per linear foot	fill, Furnish and Install 12"		
		Dollars	50 I E	Ф
	and	Cents	50 LF	\$
	(\$	)		
Item 222.36	Trench Excavation and Back RCP, per linear foot	fill, Furnish and Install 36"		
		Dollars	<b>5</b> 0.1.E	¢
	and	Cents	50 LF	\$
	(\$			
Item 225.12	12 Inch Catch Basin Connec	tion, per linear foot		
		Dollars		
	and	Cents	30 LF	\$
	(\$			
Item 230.6	6' Manhole Base, per each			
		Dollars		
	and	Cents	1 EA	\$
	(\$	)		

ITEM NUMBER	DESCRIPTION		ESTIMATE OF QUANTITIES	COMPUTED TOTALS
THE BIDDER M and fill in "Comp	UST FILL IN THESE UNIT OR LUMP SUM uted Totals"	PRICES. The B	IDDER should also car	ry out all extension
(In case of error o	or discrepancies, UNIT OR LUMP SUM PRICE	ES govern, and w	ritten words take prece	dence over figures)
Item 231.6	6' Manhole Section, per linear foot			
		Dollars		
	and	Cents	5 LF	\$
	(\$	)		
Item 235	Catch Basin Frame & Grate, per each			
		Dollars		
	and		2 EA	\$
	(\$	)		
Item 236	Manhole Frame & Cover, per each			
		Dollars		
	and		1 EA	\$
	(\$	)		
Item 240.1	Stormwater Treatment Unit, per each			
		Dollars		
	and	Cents	2 EA	\$
	(\$	)		
Item 247	12 Inch Green Traps, per each			
	-	Dollars		
	and	Cents	2 EA	\$
	(\$	)		

ITEM NUMBER	DESCRIPTION		ESTIMATE OF QUANTITIES	COMPUTED TOTALS
THE BIDDER MU	UST FILL IN THESE UNIT OR LUMP SU	JM PRICES. The B	IDDER should also car	ry out all extensions
(In case of error or	r discrepancies, UNIT OR LUMP SUM PR	ICES govern, and w	ritten words take prece	dence over figures)
Item 252.2	Manhole Adjustment 12 Inch or Less	Rigid, per each		
		Dollars		
	and	Cents	2 EA	\$
	(\$	)		
Item 270	Rodent Control, lump sum			
		Dollars		
	and		1 LS	\$
	(\$	)		
Item 301.12	12" Zinc Coated CLDI Pipe, per linea	r foot		
		Dollars		
	and		20 LF	\$
	(\$	)		
Item 301.16	16" Zinc Coated CLDI Pipe, per linea	r foot		
		Dollars		
	and	Cents	45 LF	\$
	(\$	)		
Item 301.301	30 Inch Steel Pipe Casing for Water P	ripe, per linear foot		
		Dollars		
	and	Cents	12 LF	\$
	(\$	)		

ITEM NUMBER	DESCRIPTION		ESTIMATE OF QUANTITIES	COMPUTED TOTALS
THE BIDDER MU	UST FILL IN THESE UNIT OR LUMP SUN	M PRICES. The B	IDDER should also ca	arry out all extensions
(In case of error or	r discrepancies, UNIT OR LUMP SUM PRIC	CES govern, and w	ritten words take prec	edence over figures)
Item 301.5	Polyethylene Wrap for Ductile Iron Pipe	e, per linear foot		
		Dollars		
	and	Cents	65 LF	\$
	(\$	)		
Item 302.1	Cast or Ductile Fittings, per pound			
		Dollars		
	and	Cents	3000 LB	\$
	(\$	)		
Item 304.01	Valve Box, per each			
		Dollars		
	and	Cents	2 EA	\$
	(\$	)		
Item 304.09	Water Valve Adjust to Grade, Rigid Bas	se, per each		
		Dollars		
	and	Cents	1 EA	\$
	(\$	)		
Item 307.16	16" Butterfly Valve, per each			
		Dollars		
	and	Cents	2 EA	\$
	(\$	)		

ITEM NUMBER	DESCRIPTION		ESTIMATE OF QUANTITIES	COMPUTED TOTALS
THE BIDDER M and fill in "Comp	UST FILL IN THESE UNIT OR LUMP SUMuted Totals"	I PRICES. The B	IDDER should also car	ry out all extension
(In case of error o	r discrepancies, UNIT OR LUMP SUM PRIC	ES govern, and w	ritten words take prece	dence over figures)
Item 312.12	12" Tie-In, per each			
		Dollars		
	and	Cents	2 EA	\$
	(\$	)		
Item 402.	Fine Grading, Rolling and Finishing, per	square yard		
		Dollars		
	and	Cents	420 SY	\$
	(\$	)		
Item 403	Grinding and Milling 1-1/2 Inch, per squ	are yard		
		Dollars		
	and		50 SY	\$
	(\$	)		
Item 422.1	Superpave 9.5 MM Level 2, per ton			
		Dollars		
	and	Cents	30 TON	\$
	(\$	)		
Item 422.2	Superpave 12.5 MM Level 3, per ton			
		Dollars		
	and	Cents	40 TON	\$
	(\$	)		

ITEM NUMBER	DESCRIPTION		ESTIMATE OF QUANTITIES	COMPUTED TOTALS
THE BIDDER M and fill in "Comp	UST FILL IN THESE UNIT OR LUMP SUN	M PRICES. The B	IDDER should also ca	rry out all extensions
(In case of error o	r discrepancies, UNIT OR LUMP SUM PRI	CES govern, and w	ritten words take prec	edence over figures)
Item 422.3	Superpave 19 MM Level 2, per ton			
		Dollars		
	and	Cents	60 TON	\$
	(\$	)		
Item 424	Bituminous Concrete Driveway & Vari	ous Area, per ton		
		Dollars		
	and	Cents	25 TON	\$
	(\$	)		
Item 434	Sawing Pavement, per linear foot			
		Dollars		
	and	Cents	280 LF	\$
	(\$	)		
Item 436	Resurface Trenches Temporary, per ton	ı		
		Dollars		
	and	Cents	10 TON	\$
	(\$	)		
Item 470.1	Wood Fence, Remove and Reset, lump	sum		
		Dollars		
	and	Cents	1 LS	\$
	(\$	)		

ITEM NUMBER	DESCRIPTION		ESTIMATE OF QUANTITIES	COMPUTED TOTALS		
THE BIDDER MU	UST FILL IN THESE UNIT OR LUMP S ted Totals"	UM PRICES. The B	IDDER should also car	ry out all extensions		
(In case of error or	discrepancies, UNIT OR LUMP SUM PI	RICES govern, and w	vritten words take prece	dence over figures)		
Item 501	6 Inch Reflectorized White Line (The foot	ermoplastic), per line	ar			
		<u>Dollars</u>	(90 I E	ф		
	and	Cents	680 LF	\$		
	(\$	)				
Item 502	4 Inch Reflectorized Yellow Line (The linear foot	nermoplastic), per				
		Dollars		_		
	and		700 LF	\$		
	(\$	)				
Item 619	Portable Changeable Message Sign, per day					
		Dollars				
	and	Cents	60 DAY	\$		
	(\$	)				
Item 628.314	Temporary Impact Attenuator, Redire	ective, TL-2, per eacl	n			
		Dollars				
	and	Cents	2 EA	\$		
	(\$					
Item 628.4	Temporary Impact Attenuator, Remo each	ved and Reset, per				
		Dollars	2 EA	\$		
	and	Cents	Z EA	Φ		
	(\$	)				

ITEM NUMBER	DESCRIPTION		ESTIMATE OF QUANTITIES	COMPUTED TOTALS
THE BIDDER MU	JST FILL IN THESE UNIT OR LUMP SUM P	RICES. The B	IDDER should also ca	arry out all extensions
(In case of error or	discrepancies, UNIT OR LUMP SUM PRICES	S govern, and w	ritten words take prec	edence over figures)
Item 698.4	Geotextile Fabric for Permanent Erosion C square yard	ontrol, per		
		Dollars	1 (00 0)	, de
	and	Cents	1600 SY	\$
	(\$	)		
Item 734.	Sign Removed and Reset, per each			
		Dollars		
	and		1 EA	\$
	(\$	)		
Item 748.	Mobilization, lump sum			
		Dollars		
	and	Cents	1 LS	\$
	(\$	)		
Item 767.772	Natural Streambed Material, per cubic yard	i		
		Dollars		
	and	Cents	40 CY	\$
	(\$	)		
Item 816.81	Temporary Traffic Control Signal, lump su	ım		
		Dollars		
	and	Cents	1 LS	\$
	(\$	)		

# **PROPOSAL**

# BID ITEMS for Bid No. 8491-J6 Contract No. S25-4

ITEM NUMBER	DESCRIPTION		ESTIMATE OF QUANTITIES	COMPUTED TOTALS
THE BIDDER MU	JST FILL IN THESE UNIT OR LUMP SUM ted Totals"	PRICES. The B	IDDER should also car	ry out all extensions
(In case of error or	discrepancies, UNIT OR LUMP SUM PRICE	ES govern, and w	ritten words take prece	dence over figures)
Item 852.	Safety Signing for Traffic Management, 1	per square foot		
		Dollars		
	and	Cents	250 SF	\$
	(\$	)		
Item 853.2	Temporary Barrier (TL-2), per linear foot	t		
		Dollars		
	and	Cents	260 FT	\$
	(\$	)		
Item 853.21	Temporary Barrier Removed and Reset, p	oer linear foot		
		Dollars		
	and		260 FT	\$
	(\$	)		
Item 853.8	Temporary Illumination for Work Zone,	per day		
		Dollars		
	and	Cents	30 DAY	\$
	(\$	)		
Item 854.036	Temporary Pavement Markings – 6 Inch (Tape), per linear foot			
		Dollars	80 FT	\$
	and	Cents	00 I I	Ψ
	(\$	)		

# **PROPOSAL**

# BID ITEMS for Bid No. 8491-J6 Contract No. S25-4

ITEM NUMBER	DESCRIPTIO	ON	ESTIMATE OF QUANTITIES	COMPUTED TOTALS	
THE BIDDER Mo	UST FILL IN THESE UNIT OR LUMP	SUM PRICES. The Bl	DDER should also ca	arry out all extensions	
(In case of error o	r discrepancies, UNIT OR LUMP SUM	PRICES govern, and w	ritten words take prec	edence over figures)	
Item 854.1	Pavement Marking Removal, per se	quare foot			
		Dollars			
	and	Cents	700 SF	\$	
	(\$				
Item 859.	Reflectorized Drum, per day				
		Dollars			
	and	Cents	450 DAY	\$	
	(\$	)			
Item 900	Lump Sum Reserved for City Use,	lump sum			
	One Hundred Thousand	Dollars			
	and Zero	Cents	1 LS	\$ <u>100,000.00</u>	
	(\$ 100,000	)			
Item 901.	4000 PSI, 1.5 inch, 565 Cement Concrete, per cubic yard				
		Dollars			
	and	Cents	10 CY	\$	
	(\$	)			
Item 904.	4000 PSI, 3/4 inch, 610 Cement Co	oncrete, per cubic yard			
		Dollars			
	and	Cents	10 CY	\$	
	(\$	)			

# **PROPOSAL**

# BID ITEMS for Bid No. 8491-J6 Contract No. S25-4

ITEM NUMBER	1	DESCRIPTION	ESTIMATE OF QUANTITIES	COMPUTED TOTALS	
THE BIDDER M and fill in "Comp		IIT OR LUMP SUM PRICES. The I	BIDDER should also car	rry out all extension	
(In case of error of	or discrepancies, UNIT OR	LUMP SUM PRICES govern, and v	written words take prece	edence over figures)	
Item 991.1	Temporary Control	of Water, lump sum			
		Dollars			
	and	Cents	1 LS	\$	
	(\$	)			
Item 995.01	Precast Concrete Box Culvert, 4'-0" x 5'-0", Headwalls and Wingwalls, lump sum				
		Dollars	1 LS	\$	
	and	Cents	1 115	Ψ	
	(\$	)			

# TOTAL BID PRICE FOR WORK INCLUDING CONTINGENCY

The computed contract	et price for all Items is:	
(1) (0)	NE DI WORDS	DOLLARS
(AMOU	NT IN WORDS)	
AND	CENTS \$_	(AMOUNT IN FIGURES)
NUMBER OF CAL	ENDAR DAYS TO COMPLET	,
THIS PROPOSAL IS	BASED ON PROVISIONS OF	THE FOLLOWING ADDENDA:
No	<u>No.</u>	
No	No.	

All amounts and totals given above will be subject to verification by the City. In case of variation between Unit Bid Price and Totals shown by the Bidder, the Unit Price written in words will be considered to be the bid.

The City reserves the right to reject any and all bids, wholly or in part, and to make awards in a manner deemed in the best interests of the City.

The estimated quantities in these specifications form an approximate statement of the extent of the work to be done, based upon the estimate of the Design ENGINEER. The City does not expressly or by implication agree that the actual quantity of work will correspond therewith but reserves the right to increase or decrease the quantity of any class or portion of the work, as may be deemed necessary by the Contracting Officer.

#### TIME OF COMPLETION

The bidder shall complete the work of this contract, within 300 consecutive calendar days (Saturdays, Sundays and Holidays included) from the date of the signing of the contract if the is awarded the contract.

# LIQUIDATED DAMAGES (Contracts of \$100,000 or more)

It is expressly understood and agreed, by and between the Contractor and the City, that the time for the completion of the work described herein is a reasonable time for the completion of the same, taking into consideration the average climate range and usual industrial and/or residential conditions prevailing in this locality. If the said Contractor shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereof requested in writing by the Contractor and granted in writing by the Contracting Officer, then the Contractor does hereby agree, as a part consideration for the awarding of this contract, to pay to the City the amount of \$1,500.00 per day, not as a penalty, but as liquidated damages for such breach of contract for each and every calendar day that the Contractor shall be in default after the time stipulated for completing the work. The said amount of \$1,500.00 per day is fixed and agreed upon by and between the Contractor and the City because of impracticability and extreme difficulty of fixing and ascertaining the actual damages the City would in such event sustain and said amount is agreed to be the amount of damages which the City would sustain and the said amount shall be deducted by the City for periodic payments.

Liquidated Damages shall apply to 300 consecutive calendar day construction duration.

#### LUMP SUM RESERVE FOR CITY USE

# 1. <u>Lump Sum Reserve for Contingency Work</u>

The Contractor is advised that the lump sum reserve for contingency work shall be utilized, as required by the City of Worcester, for additional work that may be required by the City and agreed to by the Contractor. Any reserve balance remaining at the end of the contract will return to the City of Worcester.

# 2. Lump Sum Reserve for Testing

The Contractor is advised that, where indicated by the City of Worcester, independent laboratory tests may be required of materials incorporated into the project. The tests will be performed by an independent laboratory selected by the City and compensated for directly by the City under the Lump Sum Reserve for Testing items. The Contractor is to cooperate fully with the City to make available any material and samples necessary to perform the independent tests. Upon completion of the contract all amount not utilized will return to the City of Worcester.

# 3. <u>Lump Sum Reserve for Traffic Police</u>

The Contractor is advised that the City of Worcester will designate the number and need for Traffic Police throughout the duration of the contract. The City will compensate directly for Traffic Police, as ordered, under the Lump Sum Reserve for Traffic Police. Upon completion of the contract all amount not utilized will return to the City of Worcester.

# **INFORMATION TO BIDDERS**

#### **GENERAL DESCRIPTION**

This bid consists of work in approximate quantities as listed in the Proposal Forms, which state the location and description of the work to be done and the materials to be furnished.

The Contract shall adhere to the City of Worcester's Standard Specifications and Details dated August 29, 2024.

The plans and specifications, proposal and addenda shall form part of this contract.

#### **QUANTITIES**

All bids will be compared on the total estimate of quantities of work to be done, as shown in the proposal.

These quantities are approximate only, being given as a basis for the comparison of bids to determine the approximate amount of the consideration of the contract. The bidder will be required to complete the work specified and/or as shown on the drawings, within the required time period, whether the required quantities are more or less than the amounts herein estimated without any change in the contract unit price. The final payment will not be made until the work is so completed.

The unit price bid for each item must allow for all collateral or indirect costs connected with it.

#### INVESTIGATION OF CONDITIONS

Bidders are expected to visit the locality of the work and acquaint themselves with all available information concerning local conditions. They are also expected to make their own estimates of the facilities needed and difficulties attending the execution of the proposed contract, including local conditions, availability of labor, uncertainties of weather and other contingencies. In no event will the City assume any responsibility whatever for an interpretation, deduction or conclusion drawn from the inspection of the site. Failure to acquaint himself with all available information concerning these conditions will not relieve the successful bidder from responsibility for estimating the difference and costs of successfully performing the complete work.

At the bidder's request, a representative of the City will point out the site of the proposed operations.

#### ADDENDA

The bidder is required to acknowledge receipt of any Addenda issued to this contract by inserting the addendum number in the space provided on the proposal form.

#### **EXPERIENCE**

Each bidder shall state in his bid whether he is now or ever has been engaged on any other contract or other work similar to that proposed, giving the year in which it was done and the manner of its execution and shall submit such other information as will tend to show his ability to prosecute vigorously the work required to these specifications. A successful bidder will be required to employ an organization thoroughly experienced and skilled in the type of work to be done. After the opening of bids any bidder may be required to submit satisfactory evidence that the specific organization which he proposes to employ on this contract has successfully executed work of the nature and quality indicated herein.

#### **EQUIPMENT**

Each bidder shall state in his bid the character, make, and amount of equipment that he proposes to employ on the work. After bids are opened any bidder may be required to show that he owns, controls by firm option, or can procure the equipment necessary for commencing, prosecuting, and completing the work as required by the specifications.

# **CONTRACTOR RESPONSIBILTY**

The Contractor must care for, replace and restore to good condition to the satisfaction of the Commissioner of Public Works any utilities, fences, sidewalks, posts, poles or other structures damaged by or interfered with by the Contractor outside the scope of work. The Contractor shall perform any necessary replacement, reparation or restoration at no additional compensation.

Damage resulting from the operation of the Contractor to any structure in the street or ground near or within the scope of work (and not required to be changed under the contract) shall be replaced, repaired or restored by the Contractor at no additional compensation.

The Contractor shall have no grounds for additional compensation because of expenses due to encountering existing pipes, conduits or structures.

The Contractor must perform construction work without damage to shade trees.

The Contractor shall cooperate with all other Contractors or other forces within the limits of the work specified. The Contractor shall allow the necessary access to the site to other Contractors and utility companies and their agents. The Contractor shall be responsible for preventing damage by others to the work performed under this contract or for having damage repaired, either by the party responsible or at his own expense.

#### **PUBLIC CONVENIENCE**

The Contractor shall so conduct his operation as to offer the least possible obstruction and inconvenience to the public.

Vehicular and pedestrian traffic will be maintained on all streets located within the project unless permission is received in writing from the commissioner of Public Works or his representatives to close the street.

Where construction operations are such that a hazard exists to the public, all safety precautions shall be maintained.

#### POLICE PROTECTION

The City of Worcester will furnish and pay for police when and where the City decides police protection is necessary. The Contractor shall notify the Engineer of the anticipated requirements as the work progresses, so that each day's protection can be scheduled not later than the preceding day.

#### ADDITIONAL WORK

- (a) The Contractor agrees to perform any work related to the Subject Matter of the contract, but not within the scope of the contract and its specifications, upon written order of the Contracting Officer. The payment for such extra work to be made in accordance with whichever of the following plans the Contracting Officer elects: (i) a price agreed upon between the parties and stipulated in the order for the extra work; (ii) a price based on the unit prices of the contract; (iii) a price determined by adding 15% to the reasonable cost of the extra work performed. Such reasonable cost to be determined by the Contracting Officer in accordance with paragraph (b) below.
- (b) In computing reasonable cost for the purposes of (iii) above, the Contracting Officer shall include the reasonable cost to the Contractor of all materials used, of all labor, common and skilled, of foremen, trucks and the fair rental of all machinery used upon the extra work for the period of such use. If the extra work requires the use of machinery not upon the work or to be used upon the work, then the cost of transportation of such machinery to and from the work shall be added to the fair rental, but said

transportation shall not cover a distance exceeding 100 miles. The Contracting Officer shall include in the cost of extra work the cost to the Contractor of any additional insurance that may be required covering public liability and bodily injuries to his employees engaged in the extra work, and the cost of Social Security or other direct assessment upon the Contractor's payroll by Federal or other properly authorized public agencies. The cost of extra work shall not include any cost or rental of small tools, buildings, or any portion of the time of the Contractor or his superintendent, or any allowance for use of capital or the premium on the bond as assessed upon the amount of extra work, these items being considered as being covered by the fifteen percent (15%) added to the reasonable cost.

(c) Dimensions, or materials of the Subject Matter of the contract, or any part thereof, either before or after commencement of construction. Where such alterations increase the quantity or standard of the work to be done, payment for such increase shall be made in the same way that payment is made for extra work under (a) and (b) above. Where such alterations diminish the quantity or standard of the work to be done, an adjustment shall be made to the benefit of the City, based upon the unit prices where used or, where unit prices are not used, as the Contracting Officer shall determine.

# **BIDDERS TO INVESTIGATE**

Bidders required to submit their proposals upon the following express conditions, which shall apply to and become part of every bid received, via:

Bidders must satisfy themselves by personal examination of the location of the proposed work and by such other means as they may desire, as to actual conditions and requirements of the work, and the accuracy of the quantities.

#### INFORMATION NOT GUARANTEED

It is understood and agreed that the City does not warrant or guarantee that the materials, conditions and pipes or other structures encountered during construction will be the same as those indicated by the information given on the drawings. The bidder must satisfy himself regarding the character, quantities, and conditions of the various materials and the work to be done.

It is further understood and agreed that the bidder or the Contractor will not use any of the information made available to him, or obtained in an examination made by him, in any manner as a basis or ground of claim or demand of any nature against the City or the Contracting Officer, arising from or by reason of any variance which may exist between the information offered and the actual materials or structures encountered during the construction work.

#### **ITEMS**

The parts of the work have been divided into items in order to enable the bidder to bid for the different portions of the work in accordance with his estimate of their cost, so that in the event of an increase or decrease in the quantity of any particular item of work, the actual quantities executed may be paid for at the price bid for that particular item of work.

#### INDETERMINATE ITEMS

Certain items in the proposal cover classes of work of doubtful necessity or work for which it is impracticable to estimate approximate quantities. Such items have been marked "Indeterminate."

#### **COMPARISON OF BIDS**

Bids will be compared on the basis of the lump sums, or quantities and unit prices bid, stated by the bidders in their proposals should the City elect to make such evaluation. The net sum thus obtained will be used to determine the order of bidders. In the event that there is a discrepancy between the lump-sum prices or unit prices written in words and written in figures, the prices written in words shall govern.

#### **DEPOSIT FORFEITED**

In case the party to whom the contract is awarded shall fail or neglect to execute the contract and furnish a satisfactory bond within the time specified, the City may determine that the bidder has abandoned the contract and thereupon the proposal and acceptance shall be null and void, and the security accompanying the proposal shall be forfeited to and retained by said City as liquidated damages for such failure or neglect and to indemnify said City for any loss which may be sustained by failure of the bidder to execute the contract and furnish bond as aforesaid. After the execution of the contract and the acceptance of the bond by the City the security accompanying the proposal of the successful bidder shall be returned.

# THE HANDLING OF LIVE STREAM FLOW

The attention of the bidder is particularly called to the requirement that in submitting his bid he has considered that the Contractor, as a contractual obligation, shall handle all live stream flow in the existing culvert as a necessary part of the culvert replacement work and for this work no additional compensation will be considered.

#### WATER SUPPLY

The Contractor shall obtain and pay for a hydrant permit from the City. The Contractor shall obtain approval from the ENGINEER prior to opening any fire hydrants. Designated fire hydrants will be provided to the Contractor for water usage.

For all necessary operations the City will, without charge, provide water under available system pressure from the nearest hydrant of the City water distribution system. The Contractor shall furnish any necessary pipe or hose extensions to conduct the water to the points of use, and shall exercise due care not to waste water.

#### LABOR CONDITIONS

The attention of the bidder is called to those parts of the contract regarding labor conditions, wage rates, etc.

#### QUESTIONS REGARDING CONTRACT DOCUMENTS

In general, no answer will be given in reply to an oral question involving interpretation of the Contract Documents. Discrepancies, omissions or doubts as to the meanings of the Contract Documents should be communicated in writing to the Commissioner of Public Works for interpretation no later than five (5) business days prior to bid opening date. Any interpretation made will be in the form of an addendum to the Contract Documents which we will forward to all bidders.

#### MANHOLE FRAME & COVER

Note that the City of Worcester Standard Item 236 Manhole Frame & Cover has been redesigned. The Bidder should refer to this item prior to bidding and should be alert to the changes.

#### **GENERAL NOTES**

- 1. Prior to the start of any construction activity in any previously unoccupied location the Contractor will supply the Engineer with a traffic flow plan for the Engineer's approval.
- Where applicable the Contractor will supply all barricades, barriers, signing, lighting, etc. warranted to ensure the safety of the general public throughout the work site as a subsidiary obligation without any additional cost to the City of Worcester and subject to the Engineer's approval.
- 3. Prior to the start of any work the contractor will be required to supply and install construction safety signing on each approach to the work zone as directed by the Engineer. Signing shall read "Street Under Construction" or "Road Work Ahead" or as directed by the Engineer. Signing shall conform to applicable provisions of section 850 of the Massachusetts Standard Specifications for Highways and Bridges latest edition.
- 4. Any necessary detouring will be arranged by the Contractor through the Engineer and subject to the approval of the Department of Public Works and Parks.
- 5. The Contractor will be required to provide adequate access to businesses affected by all construction activities.
- 6. The Contractor will be required to have onsite at all times during the course of all construction activities a full-time superintendent whom will be in responsible charge of this project. This individual will be the exclusive agent for the Contractor maintaining continuous correspondence with the City Engineers.
- 7. The Contractor will notify the Engineer in writing whenever a change of superintendent is warranted.
- 8. Any existing conditions disturbed by the construction operations shall be restored by the Contractor at his own expense.
- 9. The Contractor shall provide the Engineer with a list of streets, which will require police details at least 24 hours in advance of the work to be performed.
- 10. In case of discrepancies between City of Worcester Standard Specification & Details and the Supplement to Specifications, the City's Standard Specification & Details govern and take precedence over the Supplement to Specifications.

- 11. Gas structures will be adjusted by the owning agency. The Contract shall assist with the coordination of the work.
- 12. At the contractor's expense, all trenches shall be paved with asphalt, steel road plates are an acceptable substitute, prior to every weekend and major holiday. At no time will any portion of a public roadway or sidewalk be left with a gravel surface over the weekend or holiday period.

# SPECIAL PROVISIONS

#### NOTICE TO PROCEED

The Bidder must agree to commence work on or before the date specified in the written "Notice to Proceed" issued by the City, and/or Engineer acting on behalf of the City, and to fully complete the project within the time specified in the contract.

#### SCHEDULE OF WORK

The Contractor shall submit, to and for the comments of the Contracting Officer, a schedule of operations within fourteen (14) days after the mailing of the executed Contract to the Contractor. The schedule shall show the proposed methods of construction and sequence of work and the time the Contractor proposed to complete the various items of work within the time specified in the contract.

#### PROPER NOTIFICATION

The Contractor will be required to provide at least 48-hour notice to the Contracting Officer before locating in work sites previously unoccupied under this contract or before proceeding with paving operations.

#### **HOURS OF WORK**

In general, the City will permit the Contractor to work Monday thru Friday between the hours of 7:00 A.M. and 5:00 P.M. except as provided by the Contracting Officer. All construction work shall be completed or suspended for the winter season by November 30<sup>th</sup> unless a specific waiver is granted by the Contracting Officer.

#### CASTINGS

The Contractor will be required to return to the City-Yard any or all excess castings, either water or sewer that were replaced or abandoned by the Contracting Officer. This work will be performed as a subsidiary obligation by the Contractor and no additional payment will be made by the City.

#### OVERLOADED TRUCKS

The Contracting Officer will not accept any materials delivered to any project in motor vehicles or semi-trailer units that exceed the legal maximum gross weight allowed for the particular class, as specified in Section 19A of Chapter 90 of the General Laws of Massachusetts.

The provisions of subsection 7.03 of the Standard Specifications shall still apply.

# RULES AND REGULATIONS CONCERNING DISTINCTIVE SLOW MOVING VEHICLE EMBLEM

In accordance with the provisions of Section 7 of Chapter 90 of the General Laws as most recently amended by Chapter 684 of the Acts of 1970 and following due notice and a public hearing held on January 8, 1971 at the Registry of Motor Vehicles, 100 Nashua Street, Boston, Massachusetts, I hereby prescribe the following standards and specifications for a distinctive slow-moving vehicle emblem.

- 1.1 The minimum total construction and the dimensions of the emblem shall conform to Society of Automotive Engineers standards as last revised in June, 1967.
- 1.2 The emblem shall be securely mounted on the rear of the vehicle with a broad base down facing squarely to the rear of said vehicle, as near to center as possible with the bottom of the emblem not less than 3 feet nor more than 5 feet above ground. Said emblem shall be Incorporated herein and made a part of these rules and regulations is the standard of the Society of Automotive Engineers, SAE-J943A as last revised in June 1967, pertaining to a slow-moving vehicle identifications emblem.

#### FINAL CLEAN-UP

Upon completion of the work and before acceptance and final payment, the Contractor shall remove and dispose of in an approved manner at his own expense, from the right-of-way, construction site, and adjoining property, all temporary structures and all surplus materials and rubbish which the Contractor may have accumulated during the prosecution of the work, and shall leave the areas in a neat and orderly condition. No equipment or material shall be left within any of the aforementioned areas after acceptance of the Contract without the written permission of the Engineer. The Contractor shall not abandon any material at or near the site regardless of whether or not it has any value.

#### **PERMITS**

The Contractor will be responsible for any and all City of Worcester permits including the Street Opening Permit for each location, which can be obtained from the Management Services Department located at 20 East Worcester Street, Worcester, Massachusetts.

#### **EMERGENCY TELEPHONE NUMBERS**

A 24-hour telephone number must be supplied along with the name of the person to he notified for repairs or emergencies. Failure to respond will necessitate the actuation of City crews at the Contractor's expense.

#### **BID DOCUMENT**

There is a fifty dollar (\$50.00) <u>non-refundable</u> charge for each bid document that must be tendered by either a Cashier's Check, Certified Check or Money Order payable to the City of Worcester.

#### **GENERAL SPECIFICATIONS**

#### SECTION I LOCATION AND WORK TO BE DONE

The work herein specified to be done consists of the installation of a box culvert on Salisbury Street in the City of Worcester, Massachusetts.

The approximate amount of Base Bid replacement is as follows:

0.1 acre of clearing and grubbing

210 cubic yards of unclassified excavation and backfill

Perform (2) test pits

Install tree protection for (5) trees

60 cubic yards of class B rock excavation and disposal

15 cubic yards of trench rock excavation and disposal

15 cubic yards of earth excavation below normal grade

15 cubic yards of sand borrow

115 cubic yards of gravel borrow

40 cubic yards of dense graded crushed stone

35 cubic yards of screened loam borrow

50 cubic yards of crushed stone, 3/4 inch

360 cubic yards of class A trench excavation

50 pounds of furnish and spread calcium chloride

305 square yards of seeding

Cleaning up

Comply with the conservation commission's order of conditions

215 linear feet of installation and maintenance of erosion controls

Implement environmental health and safety program

8 hours of personal protection level C upgrade

8 hours of licensed site professional services

50 tons disposal of unregulated soil

50 tons disposal of regulated soil – in-state facility

50 tons disposal of regulated soil – out-of-state facility

Inspection and testing for asbestos

50 linear feet of removal of asbestos

50 linear feet of trench excavation and backfill, furnish and install 12" PVC

50 linear feet of trench excavation and backfill, furnish and install 36" RCP

30 linear feet of 12 inch catch basin connection

Install (1) 6' manhole base

5 linear feet of 6' manhole section

Install (2) catch basin frame and grate

Install (1) manhole frame and cover

Install (2) stormwater treatment units

Install (2) 12 inch green traps

Adjust (2) manholes, 12 inch or less rigid

Provide rodent control

8 linear feet of 12" zinc coated CLDI pipe

45 linear feet of 16" zinc coated CLDI pipe

12 linear feet of 30 inch steel pipe casing for water pipe

55 linear feet of polyethylene wrap for ductile iron pipe

3000 pounds of cast or ductile fittings

Install (2) valve box

Adjust (1) water box to grade, rigid base

Install (2) 16" butterfly valve

Install (2) 12" tie-in

420 square yards of fine grading, rolling and finishing

50 square yards of grading and milling, 1-1/2 inch

30 tons of superpave 9.5mm level 2

40 tons of superpave 12.5mm level 3

60 tons of superpave 19mm level 2

25 tons of bituminous concrete driveway

280 linear feet of sawing pavement

10 tons of resurfacing for temporary trenches

Remove and reset 30 linear feet of wood fence

680 linear feet of 6 inch reflectorized white line (thermoplastic)

700 linear feet of 4 inch reflectorized white line (thermoplastic)

60 days for portable changeable message signs

Install (2) temporary impact attenuator, redirective, TL-2

Remove and reset (2) temporary impact attenuator

1600 square yards of geotextile fabric for permanent erosion control

Remove and reset (1) sign

Mobilization

40 cubic yards of natural streambed material

Install temporary traffic control signal

250 square yards of safety signing for traffic management

260 linear feet of TL-2 temporary barrier

Remove and reset 260 linear feet of temporary barrier

30 days of temporary illumination for work zone

80 linear feet of temporary pavement markings – 6 inch (tape)

700 square feet of pavement marking removal

450 days of reflectorized drums

10 cubic yards of 4000 psi, 1.5 inch, 565 cement concrete

10 cubic yards of 4000 psi, 3/4 inch, 610 cement concrete

Install temporary control of water structure

Install precast concrete box culvert, 4'-0" x 5'-0", headwalls and wingwalls

The location, general characteristics, and principal details are shown on a set of nineteen (19) drawings, entitled:

CITY OF WORCESTER, MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS & PARKS
CONTRACT NO. S25-4
SALISBURY STREET CULVERT REPLACEMENT

The drawings listed above are the contract drawings, sometimes referred to herein as "the drawings". Additional drawings showing details in accordance with which the work is to be constructed will be furnished from time to time by the Contracting Officer, if found necessary, and shall then become a part hereof.

#### SECTION II HANDLING AND DISTRIBUTION

The Contractor shall, at their own expense, handle, haul, and distribute all materials and all surplus materials on the different portion of the work as required.

They shall provide suitable and adequate storage room for materials and equipment during the progress of the work and be responsible for any loss of or damage to materials and equipment furnished or accepted by them until the final acceptance of the work.

Delays in handling involving storage and demurrage charges by transportation companies and vendors shall be at the expense of the contractor.

# SECTION III SAMPLES - INSPECTION - APPROVAL

All materials and equipment furnished by the Contractor to be incorporated in the work shall be subject to the inspection and approval of the Contracting Officer. As soon as possible after the contract has been awarded, the Contractor shall furnish to the Contracting Officer data relating to materials and equipment. Such data shall be sufficiently complete to enable the Contracting Officer to identify the particular product in question.

If the Contracting Officer so requires, either prior to beginning or during the progress of the work, the Contractor shall submit samples of materials for such special tests as may be necessary to demonstrate that they conform to specifications. Such samples shall be furnished, taken, packed, and shipped as directed, at the expense of the contractor. Except as otherwise noted, the City shall make arrangements for and pay for the tests.

Facilities and labor for the handling and inspection of all materials and equipment shall be furnished by the Contractor. Defective materials and equipment shall immediately be removed from the site of the work.

The Contractor shall place his orders for the various materials sufficiently early to permit the completion of all testing and inspection before the materials are required for incorporation in the work. He may not claim that his work has been delayed because of his own failure to purchase his materials early enough to allow for the time required for such inspection and testing.

When required, the Contractor shall furnish to the Contracting Officer triplicate sworn copies of manufacturer's shop or mill tests (or reports from independent testing laboratories) relative to materials, equipment performance ratings, and concrete data.

After approval of the samples, data, etc., the materials and equipment used on the work shall in all respects conform therewith.

#### SECTION IV OCCUPYING PRIVATE LAND

The Contractor shall not (except after consent from the proper parties) enter or occupy with men, tools, materials, or equipment, any land outside the rights-of-way or property of the City.

#### **SECTION V PERMITS**

The Contractor shall at his own expense; take out necessary permits from the county, municipal or other public authorities; shall give all notices required by law or ordinances and shall post all bonds and pay all fees and charges incident to the due and lawful prosecution of the work covered by this Contract.

# SECTION VI INTERFERENCE WITH AND PROTECTION OF STREETS DRIVES, ETC.

The Contractor shall not close nor obstruct any portion of a street, road, or private way without obtaining permits therefore from the proper authorities. If any street or private way shall be rendered unsafe by the Contractor's operations, he shall make such repairs or provide such temporary ways or guards as shall be acceptable to the Contracting Officer.

Streets, roads, private ways, and walks shall be maintained passable by the Contractor at his expense, and the Contractor shall assume full responsibility for the adequacy and safety of provisions made.

The Contractor shall conduct his work so as to interfere as little as possible with private business and public travel. He shall at his own expense, wherever necessary or required, maintain fences, provide watchmen, maintain lights, and take such other precautions as may be necessary to protect life and property, and shall be liable for all damages occasioned in any way by his act or neglect, or that of his agents, employees, or workmen.

## SECTION VII STORAGE OF MATERIALS AND EQUIPMENT

All excavated materials, construction equipment, and materials and equipment to be incorporated in the new work, shall be so placed as not to injure the work and so that free access may be had at any time to all parts of the work and to all public utility installations in the vicinity of the work. Materials and equipment shall be kept neatly piled and compactly and conveniently stored so as to inconvenience as little as possible public travel and adjoining tenants.

#### SECTION VIII INSUFFICIENCY OF SAFETY PRECAUTIONS

If at any time, in the opinion of the Contracting Officer, the work is not properly lighted, barricaded, and in all respects safe in respect to public travel, persons on or about the work, or public or private property, the Contracting Officer shall have the right to order such safeguards to be erected and such precautions to be taken as he deems advisable and the Contractor shall promptly comply with such orders. If under such circumstances, the Contractor does not or cannot immediately put the same into proper and approved conditions, or, if the Contractor or his representative is not upon the ground so that he can be immediately notified of the insufficiency of safety precautions there, the Contracting' Officer may put the work into such a condition that it shall be in his opinion, in all respects safe, and the Contractor shall pay all expenses of such labor and materials as may have been used for this purpose by him or by the Contracting Officer. Such action of the Contracting Officer, or his failure to take such action, shall in no way relieve the Contractor of the entire responsibility for any cost, loss, or damage by any party sustained on account of the insufficiency of the safety precautions taken by him or by the Contracting Officer acting under authority of this section.

# **SECTION IX PUBLIC SAFETY**

The Contractor shall at his expense furnish all required barricades, warning and detour signs, and shall at all times provide adequate control of moderate traffic with flagmen. Wherever, in the opinion of the Contracting Officer, traffic is sufficiently congested or public safety is endangered, the City will furnish uniformed Police Officers without charge to the Contractor to direct traffic and to keep traffic off any part of the highway in which construction is being carried on. These Officers shall be in addition to the Contractor's watchmen required under the other items of the contract or his flagmen required herein.

The employment of traffic watchmen, flagmen, or special officers for any purpose connected with the project shall in no way relieve the Contractor of any responsibility or liability under the terms of the contract.

# SECTION X CONTRACTING OFFICER TO GIVE ORDERS

The Contracting Officer shall make all necessary explanations as to the meaning and intention of the drawings and specifications, and shall give all necessary orders and directions.

The order or sequence of execution of the work and the general conduct of the work shall be subject to the approval of the Contracting Officer, who shall have authority to direct the order or sequence where public necessity or welfare shall require, which approval or direction, shall however, in no way affect the responsibility of the Contractor in the conduct or the work. Whenever the Contractor is not present on any part of the work where it may be desired to give directions, orders may be given by the Contracting Officer, and shall be received and obeyed by the superintendent or foreman who may have charge of the particular work in reference to which orders are given.

#### SECTION XI LIABILITY OF CONTRACTOR

The Contractor shall take all responsibility for the work done under this contract, for the protection of the work, and for preventing injuries to persons and damage to property and utilities on or about the work. He shall in no way be relieved of his responsibility by any right of the Contracting Officer to give permission or issue orders relating to any part of the work, nor by any such permission given or orders issued nor by failure of the Contracting Officer to give such permission or issue such orders. The Contractor shall bear all losses resulting to him or to the City on account of the amount or character of the work, or because the nature of the land in or on which work is done is different from what was estimated or expected, or on account of the weather, elements, or other causes.

#### SECTION XII LINES, GRADES, AND MEASUREMENTS

The controlling lines and grades shall be given to the Contractor, who shall provide at his own expense such batter boards, forms, materials, and labor as may be required. Additional batter boards, lines, grades, and forms shall be furnished and set by the Contractor as directed. If the Contractor, through willfulness or carelessness, removes or permits to be removed said reference marks before the prosecution of the work requires it, they shall be replaced at his expense.

The Contractor shall make all measurements and check dimensions necessary for the proper construction of the work called for by the drawings and specifications, and during the prosecution of the work, he shall make all necessary measurements to prevent misfitting in said work, and he shall be responsible therefore and for the accurate construction of the entire work.

#### SECTION XIII WORK TO CONFORM

All work shall conform during its progress and on its completion truly to the lines, levels, and grades indicated on the drawings or given by the Contracting Officer and shall be built in a thoroughly substantial and workmanlike manner, in accordance with the plans and specifications and directions given from time to time by him. In no case shall any work in excess of the plan requirements and specifications be paid for unless ordered in writing by said Contracting Officer.

All work done without instructions having been given therefore by the Contracting Officer, or done without proper lines or levels, or done during the absence of the Contracting Officer or his agent, will not be estimated or paid for except when such work is authorized by the Contracting Officer in writing. Work so done may be ordered uncovered or taken down, removed, and replaced at the Contractor's sole cost and expense.

#### SECTION IX DISCREPANCIES ERRORS AND OMISSIONS

The drawings and specifications are intended to be explanatory of each other, but should any discrepancy appear or any misunderstanding arise as to the import of anything contained in either, the interpretation and decision of the Contracting Officer shall be final and binding on both parties to this contract.

Any correction or errors or omissions in drawings and specifications may be made by the Contracting Officer when such correction is necessary for the proper fulfillment of their intention as construed by him. Where said correction of errors or omissions, except as provided in the next two paragraphs below, adds to the amount of work to be done by the Contractor, compensation for said additional work shall be made under the items for Extra Work except where additional work may be classed under some item of work for which a unit price is included in the proposal.

The fact that specific mention of a fixture, or of any part of the work is omitted in the specifications whether intentionally or otherwise, when the same is clearly shown or indicated on the drawings, or is usually and customarily required to complete fully such work as is specified herein, will not entitle the Contractor to consideration in the matter of any claim for extra compensation, but the said fixtures or work, or both, must be installed or done the same as if called for by both the drawings and drawings and specifications.

All work indicated on the drawings and not mentioned in the specifications, or vice versa, and all work and material usual and necessary to make the work complete in all its parts, whether or not they are indicated on the drawings or mentioned in the specifications, shall be furnished and executed the same as if they were called for by both the drawings and specifications.

#### SECTION XV PIPE LOCATION

Pipelines will be located substantially as indicated on the drawings, but the right is reserved to make such modifications in location as may be found desirable to avoid interference with existing structures or for other reasons. Where fittings, etc., are noted on the drawings, such notation is for the Contractor's convenience and does not relieve him from laying and jointing different or additional items, where required, at the unit prices agreed upon in the proposal.

#### SECTION XVI LIMITS OF NORMAL EXCAVATION

In determining the quantities of excavation to which unit prices shall apply, the limits of normal width and depth of excavation shall be as described below unless other limits are indicated on the drawings or specified.

For pipes in trench, the normal width of the trench shall be measured between vertical planes which are a distance apart equal to the sum of 18 inches plus 1-1/3 times the nominal inside diameter of the pipe. If the width so computed is less than 3 feet, a width of 3 feet shall be taken as the normal width for payment. The normal depth shall be measured to a distance of 0.5 feet below the bottom of the outside of the pipe in earth and in rock unless there be a cradle underneath the pipe, in which case the normal depth shall be measured to the underside of the cradle. The width of trench for the cradle shall be assumed to be that above specified for pipes in trenches. No allowance will be made for additional width or depth of trench for bell holes or at the manholes.

For other structures, the normal width shall be measured between vertical planes 1 ft. outside the neat lines of the several parts of the structure, except that the width at any elevation shall be measured as not less than the width at a lower elevation. The normal depth shall be measured to the underside of that part of the structure for which the excavation is made.

#### SECTION XVII COMPUTATION OF QUANTITIES

For the estimating of quantities in which the computation of areas by geometric methods would be comparatively laborious it is stipulated and agreed that the planimeter shall be considered an instrument of precision adapted to the measurement of such areas.

It is further stipulated and agreed that the computation of the volume of prismoids shall be by the method of average end areas.

#### SECTION XVIII PROTECTION AGAINST WATER AND STORM

The Contractor shall take all precautions to prevent damage to the work by groundwater, storms, or by floodwater entering the site of the work directly or through the ground. In case of damage by storm or water, the Contractor shall make such repairs or replacements or rebuild such parts of the work as the Contracting Officer may require in order that the finished work may be completed as required by the drawings and specifications.

#### SECTION XIX PRECAUTIONS DURING ADVERSE WEATHER

During adverse weather the Contractor shall take all necessary precautions so that the work may be properly done and satisfactory in all respects. When required, protection shall be provided by use of tarpaulins, wood and building paper shelters, or by other approved means.

During cold weather, materials shall be preheated, if required, and the materials and adjacent structure into which they are to be incorporated shall be made and kept sufficiently warm so that a proper bond will take place and a proper curing, aging, or drying will result. Protected spaces shall be artificially heated by approved means which will result in a moist or a dry atmosphere according to the particular requirements of the work being protected. Ingredients for concrete and mortar shall be sufficiently heated so that the mixture shall be warm throughout when used.

The Contracting Officer may suspend construction operations at any time when, in his judgment, the conditions are unsuitable or the proper precautions are not being taken, whatever the weather may be, in any season.

# **SECTION XX DEFINITIONS**

Wherever the words defined in this section or pronouns used in their stead occur in the specifications, they shall have the meanings herein given.

# As Directed, As Required, Etc.

Wherever in the specifications, or upon the drawings, the words "as directed", "as required," "as permitted," or words of like import are used, it shall be understood that the direction, requirement, or permission of the Contracting Officer is understood and similarly, the words "approved," "acceptable," "satisfactory" or words of like import shall mean approved by or acceptable and satisfactory to the Contracting Officer.

#### Elevation

The figures given in the contract and specifications or upon the drawings after the word "elevation" or abbreviation of it shall mean the distance in feet above the datum adopted by the Contracting Officer.

#### Rock

The word "rock" wherever used as the name of an excavated material shall mean boulders and pieces of concrete or masonry exceeding one-half cubic yard in volume, or solid ledge rock which, in the opinion of the Contracting Officer requires for its removal, drilling and blasting or wedging, or sledging, or barring, or breaking up with a power-operation tool. No soft or disintegrated rock which can be removed with a hand pick or power-operated excavator shovel, no loose, shaken, or previously blasted rock or broken stone in rock fillings or elsewhere, and no rock exterior to the maximum limits of measurement allowed, which may fall into the excavation, will be measured or allowed. Excavated stone paving blocks and concrete roadway base within the limits of the trench excavation shall be defined and measured as "rock" excavation.

#### Earth

The word "earth" shall mean all kinds of material excavated or which are to be excavated, except rock as above defined.

#### SECTIONS XXII ABBREVIATIONS

Where any of the following abbreviations are used in these specifications, they shall have the meaning set forth opposite each.

AAR - Association of American Railroads

AASHO - American Association of State Highway Officials

ACI - American Concrete Institute

AGA - American Gas Association

AIEE (IEEE) -American Institute of Electrical Engineers (Institute of Electrical and Electronic Engineers Inc.)

AISC - American Institute of Steel Construction

ANSI - American National Standards Institute - American Railway Association

AREA - American Railway Engineering Association

-United States of America Standards Institute (formerly American Standards Association)

ASCE - American Society of Civil Engineers

ASLA - American Society of Landscape Architects

ASME - American Society of Mechanical Engineers - American Society for Testing and Materials

AWS - American Welding Society

AWWA - American Water Works Association

CIPRA - Cast Iron Pipe Research Association

EIS - Environmental Impact Statement

MEC - Massachusetts Electrical Code

NASSCO - National Association of Sewer Service Companies

NBS - National Bureau of Standards

NCPI - National Clay Pipe Institute

NEC - National Electrical Code, Latest Edition

NEMA - National Electrical Manufacturers Association

NEWWA - New England Water Works Association

NFPA - National Fire Protection Association

USASI - Standard of the United States of America Standards Institute (formerly American Standards Association)

FEDERAL SPECIFICATION - Federal Specifications issued by the Federal Supply Service of the General Services Administration Washington.D.C

AWG - American or Brown and Sharpe. Wire Gage.

STL.W.G. - U.S. Steel Wire, Washburn and Moen, American Steel & Wire Cos., Roetling Gage

USSGage - United States Standard Gage

# WORCESTER STANDARD SPECIFICATIONS

Except as indicated in the specifications and on the plans, all work shall be in accordance with the pertinent requirements of the



# STANDARD CONSTRUCTION SPECIFICATIONS AND DETAILS

August 29, 2024

# **SUPPLEMENT TO SPECIFICATIONS**

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#### SUPPLEMENT TO SPECIAL PROVISIONS (ON PAGES E1 TO E3)

#### SPECIAL PROVISIONS

In addition to Special Provisions located on pages E1 through E3, the Specifications shall be amended and supplemented by the following:

# 1. Hauling, Handling and Storage of Materials

- A. The Contractor shall, at its own expense, handle and haul all materials furnished by it and shall remove any of its surplus materials at the completion of the work.
- B. The Contractor shall provide suitable and adequate storage for equipment and materials furnished by it that are liable to injury and shall be responsible for any loss of or damage to any equipment or materials by theft, breakage, or otherwise.
- C. All excavated materials and equipment to be incorporated in the Work shall be placed so as not to injure any part of the Work or existing facilities and so that free access can be had at all times to all parts of the Work and to all public utility installations in the vicinity of the work. Materials and equipment shall be kept neatly piled and compactly stored in such location as will cause a minimum of inconvenience to public travel and adjoining owners, tenants and occupants.
- D. The Contractor shall be responsible for all damages to the work under construction during its progress and until final completion and acceptance even though partial payments have been made under the Contract.

# 2. Easements

- A. As indicated on the drawings, a portion of the work is located in easements obtained by the Owner. The Contractor has no rights outside of the easements unless they are obtained from the property owner.
- B. Contractor shall schedule work so that it will cause minimum inconvenience and nuisance to abutting property owners, over the shortest possible time.
- C. Easements shall be kept clean; no rubbish or discarded construction materials shall be allowed to accumulate. Storage of excess construction materials, including soil, ledge, equipment, or machinery on easements will not be allowed.
- D. Restoration of fences, shrubs, trees and grass, both natural and artificial, shall be completed promptly following completion of the work in an easement, to minimize disruption and inconvenience to property owners.
- E. Unless approved by the Engineer, the use of easements for ease of access to and egress from other areas of the project will not be permitted.

# 3. Open Excavations

- A. All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons, and damage to property. The Contractor shall, at his own expense, provide suitable and safe means for completely covering all open excavations and for accommodating travel when work is not in progress.
- B. Bridges provided for access to private property during construction shall be removed when no longer required.
- C. The length of open trench will be controlled by the particular surrounding conditions but shall always be confined to the limits prescribed by the Engineer.
- D. If the excavation becomes a hazard, or if it excessively restricts traffic at any point, then special construction procedures shall be taken, such as limiting the length of trench and prohibiting stocking excavated material in the street.
- E. All street excavations shall be completely closed at the end of each work day. Backfilling or use of steel plates of adequate strength to carry traffic shall be used.

# 4. Maintenance of Traffic

- A. Unless permission to close the street is received in writing from the proper authority, all excavated materials and equipment shall be placed so that vehicular and pedestrian traffic may be safely maintained at all times.
- B. Should the Chief of Police deem it necessary, uniformed officers will be assigned to direct traffic. The Contractor shall make all arrangements in obtaining uniformed officers required.
- C. The Contractor shall at its own expense, as directed by the Police Traffic Control/Safety Officer, provide and erect acceptable barricades, barrier fences, traffic signs, and all other traffic devices not specifically covered in a bid item, to protect the work from traffic, pedestrians, and animals. The Contractor shall provide sufficient temporary lighting such as lanterns/flashers (electric battery operated) or other approved illuminated traffic signs and devices to afford adequate protection to the traveling public, at no additional cost to the Owner. See Section 01552 CONSTRUCTION ZONE SAFETY PLAN.
- D. The Contractor shall furnish all construction signs that are deemed necessary by and in accordance with Part VI of the <u>Manual on Uniform Traffic Control Devices</u> as published by the U.S. Department of Transportation. In addition, the Contractor may be required to furnish up to 128 square feet of additional special construction warning signs. Size and exact wording of signs shall be determined by the Engineer during construction.

- E. The intent of policing is to ensure public safety by direction of traffic. Police officers are not to serve as watchmen to protect the Contractor's equipment and materials.
- F. Nothing contained herein shall be construed as relieving the Contractor of any of its responsibilities for protection of persons and property under the terms of the Contract.

# 5. Care, Protection, and Security of Property

- A. The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, such property shall be promptly restored by the Contractor, at his expense, to a condition similar or equal to that existing before the damage was done, to the satisfaction of the Engineer.
- B. The Contract shall provide security for the private property with temporary by-pass pumping during the entire duration of the temporary by-pass. Once the temporary by-pass pumping is not required, the Contractor shall notify the owner and/or contact person of the private property. The private property shall be secured and left in the original condition prior to the temporary by-pass. If any damages or trespassing occurs at the private property during the temporary by-pass, the Engineer is to be notified immediately. The Contractor is responsible for all property damage encountered during the temporary by-pass.

# 6. Protection and Relocation of Existing Structures and Utilities

- A. All existing buildings, utilities, pipes, poles, wires fences, curbings, property line markers and other structures which the Engineer decides must be preserved in place without being temporarily or permanently relocated, shall be carefully supported and protected from damage by the contractor. Should such property be damaged, it shall be restored by the Contractor, at no additional cost to the Owner.
- B. The Contractor shall determine the location of all underground structures and utilities (including existing water services, drain lines, electrical lines, and sewers). Services to buildings shall be maintained, and all costs or charges resulting from damage thereto shall be paid by Contractor.
- C. On paved surfaces the Contractor shall not use or operate tractors, bulldozers, or other power-operated equipment with treads or wheels which are shaped so as to cut or otherwise damage such surfaces.
- D. All property damaged by the Contractor's operations shall be restored to a condition at least equal to that in which it was found immediately before work was begun. Suitable materials and methods shall be used for such restoration.

E. Restoration of existing property and structures shall be carried out as promptly as practicable and shall not be left until the end of the construction period.

#### 7. Maintenance of Flow

- A. The Contractor shall, at his own cost, provide for the flow of sewers and drains interrupted during the progress of the work and shall immediately cart away and dispose of all offensive matter. The entire procedure of maintaining existing flow shall be fully discussed with the Engineer well in advance of the interruption of any flow.
- B. All existing drainage facilities including, but not limited to; brooks, streams, canals, channels, ditches, culverts, catch basins and drainage piping shall be adequately safeguarded so as not to impede drainage or to cause siltation of downstream areas in any manner whatsoever. If the Contractor damages or impairs any of the aforesaid drainage facilities, he shall repair the same within the same day.
- C. At the conclusion of the work, the Contractor shall remove all silt in drainage structures caused by his operations as described in Section 01740, CLEANING UP.

# 8. Rejected Materials and Defective Work

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

#### 9. Sanitary Regulations

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

## 10. Safety and Health Regulations

This project is subject to the Safety and Health regulations of the U.S. Department of Labor set forth in 29 CFR, Part 1926, and to the Massachusetts Department of Labor and Industries, Division of Industrial Safety "Rules and Regulations for the Prevention of Accidents in Construction Operations (454 CMR 10.0 et. seq.)." Contractors shall be familiar with the requirements of these regulations.

#### 11. Site Investigation

The Contractor acknowledges that he has satisfied himself as to the conditions existing at the site of the work, the type of equipment required to perform this work, the quality and quantity of the materials furnished insofar as this information is reasonably ascertainable from an inspection of the site, as well as from information presented by the drawings and specifications made a part of this contract. Any failure of the Contractor to acquaint himself with available information will not relieve him from the responsibility for estimating properly the difficulty or cost of successfully performing the work. The Owner assumes no responsibility for any conclusion or interpretation made by the Contractor on the basis of the information made available by the Owner.

## 12. Weather Protection

In conformance with Sections 44F and 44G of Chapter 149 of the General Laws of Massachusetts, the General Contractor shall install weather protection and shall furnish adequate heat in the area so protected during the months of November through March. Standards for such specifications shall be established by the Director of Building Construction in the Executive Office for Administration and Finance.

#### 13. Electric Service

- A. The Contractor shall make all necessary applications and arrangements and pay for all fees and charges for electrical energy for power and light necessary for the proper completion of this contract during its entire progress. The Contractor shall provide and pay for all temporary wiring, switches, connections, and meters.
- B. There shall be sufficient electric lighting so that all work may be done in a workmanlike manner where there is not sufficient daylight.

#### 14. Hazardous Waste

Should the Contractor, while performing work under this contract, uncover hazardous materials, as defined in Massachusetts Hazardous Waste Regulations 310 CMR 30.00, he shall immediately notify the Engineer. The Contractor is not, and has no authority to act as, a handler, generator, operator or disposer of hazardous or toxic substances found or identified at the site, and the Owner shall undertake all such functions.

## 15. Sewer Main

Flow from the existing sewer main shall be bypass pumped as specified in Section 01575 HANDLING EXISTING FLOWS.

## 16. Pipe Location

Pipe shall be located substantially as indicated on drawings. The Owner reserves the right, acting through the Engineer, to make such modifications as may be deemed desirable to avoid interference with existing structures or for other reasons.

## 17. <u>Dimensions of Existing Structures</u>

Where the dimensions and locations of existing structures are of critical importance in the installation or connections of new work, the Contractor shall verify such dimensions and locations in the field before the fabrication of any material or equipment which is dependent on the correctness of such information.

### 18. Occupying Private Property

The Contractor shall not enter upon nor occupy with men, equipment or materials any property outside of the public roadways or Owner's easements, except with the written consent of the property owner or property owner's agent.

## 19. Existing Utility Locations - Contractor's Responsibility

- A. The location of existing underground services and utilities shown on the drawings is based on available records. It is not warranted that all existing utilities and services are shown, nor that shown locations are correct. The Contractor shall be responsible for having the utility companies locate their respective utilities on the ground prior to excavating.
- B. To satisfy the requirements of Massachusetts law, Chapter 82, Section 40, the Contractor shall, at least 72 hours, exclusive of Saturdays, Sundays and holidays, prior to excavation in the proximity of telephone, gas, cable television and electric utilities, notify the utilities concerned by calling "DIG SAFE" at telephone number: 1-888-344-7233 or 811.
- C. The Contractor shall coordinate all work involving utilities and shall satisfy himself as to the existing conditions of the areas in which he is to perform his work. He shall conduct and arrange his work so as not to impede or interfere with the work of other contractors working in the same or adjacent areas.

## 20. Coordination of Work

The General Contractor shall be responsible for coordinating his own work as well as that of any subcontractors. He shall be responsible for notification of the Engineer when each phase of work is expected to begin and the approximate completion date.

### 21. Maintenance of Trench Surface

After backfilling and compacting the trench, the Contractor shall be responsible for keeping the ground surface dry and passable at all times until the surface has been restored to original conditions.

## 22. Compliance with Permits

The Contractor shall perform all work in conformance with requirements of the Permits, which appear in Section 00890 - PERMITS.

## 23. Cutting, Fitting and Patching

- A. The Contractor shall do all cutting, fitting, or patching of his work that may be required to make its several parts come together properly and fit it to receive or be received by work of other Contractors, as shown upon or reasonably implied by the drawings and the specifications for the completed structure, including all existing work.
- B. The Contractor shall not endanger any work by cutting, digging, or otherwise and shall not cut or alter the work of any other Contractor, save with the consent of the Engineer.
- C. All holes or openings required to be made in new or existing work, particularly at pipe, conduit, or other penetrations not covered by escutcheons or plates shall be neatly patched. All such holes shall be made completely watertight as approved by the Engineer.
- D. Size and locations of holes required in steel, concrete, or other structural or finish materials for piping, wiring, ducts, etc., which have not been located and detailed on the drawings shall be approved by the Engineer prior to layout and cutting thereof. All holes shall be suitably reinforced as required by the Engineer.
- E. Workmanship and materials of patching and repair work shall match the adjacent similar work and shall conform to the applicable sections of the specification. Patches and joints with existing work shall provide, as applicable in each case, visual, structural, and waterproofing continuity.

## 24. Contractor's Representative

Contractor shall designate a representative who will be available to respond to emergency calls by the Owner at any time day and night and on weekends and holidays should such a situation arise.

### 25. Construction Crews

The Contractor shall not increase the number of construction crews assigned to the work without providing one week advance notice to the Engineer.

## 26. Massachusetts Data Security Regulations

The Contractor is required to comply with data security regulations contained in 201 CMR 17.00 that have been established to safeguard personal information of Massachusetts residents contained in paper or electronic records. The Contractor shall not submit to the Engineer or Owner documents in paper or electronic form that contain personal information (person's name combined with one or more of the following – Social Security Number, driver's license number or state-issued identification card number, financial institution account number, or credit or debit card number). Any document submitted to the Engineer that violates this provision shall be returned to the Contractor and the Contractor shall remove personal information from the document prior to resubmitting it to the Engineer. The Contractor shall require each Subcontractor to also comply with the MA data security regulations insofar as they involve submittal of personal information to the Engineer and Owner.

### 27. <u>Bidder Certification – OSHA Training</u>

- A. As of July 1, 2006, all employees who work on Massachusetts public works construction sites, on projects estimated to cost more than \$10,000, must have no less than ten (10) hours of OSHA-approved safety and health training.
- B. This law will apply to any bid submitted on or after July 1, 2006 and to any contract awarded on or after July 1, 2006. This law directs the Massachusetts Attorney General to restrain award of the construction contracts to any contractor who is in violation of this requirement and to restrain the performance of these contracts by non-complying contractors.
- C. Noncompliance with this law will disqualify contractors from bidding on public contracts.

#### 28. Winter Work

A. The Owner will allow the Contractor to work within the public ways on this Project during the winter months.

- B. The Contractor will be required to backfill all excavations at the end of each work day, or place Jersey barriers around open excavations.
- C. The Owner has agreed to provide snow removal services on all public ways affected by this Project. The Owner will not remove snow from the Contractor's work area that the public will not be using for either driving or pedestrian activity.
- D. The Contractor will provide snow removal services on any public way affected by his work that has been authorized by the Owner to be closed to through traffic. Snow will be plowed in accordance with the Owner's normal plowing schedule for the closed public ways.
- E. In no event will the Owner remove snow on any private way affected by the Contractor's work on this Project. The Contractor may coordinate snow removal activities with whoever provides these services for the owners of the private way(s).

## 29. Nighttime/Weekend Work

- A. Construction activity shall be restricted to a normal 8-hour day, 5-day week between the hours of 7:00 a.m. and 5:00 p.m., Monday through Friday, except when required due to high traffic areas or vicinity to schools or other sensitive buildings. Continuous work for CIPP lining may extend beyond work hours; however, no new work shall be started after 4:00 p.m. unless authorized by the Owner and approved by the Engineer in advance.
- B. No construction work shall be allowed on Saturdays, Sundays or Holidays without written authorization from the Owner and approval of the Engineer. The compensation of detail officers and the Engineer for work approved outside of the limitations aforementioned shall be the responsibility of the Contractor and shall be at no additional cost to the Owner.

#### MEASUREMENT AND PAYMENT

#### 1.01 GENERAL:

- 1. The measurement and payment for the work to be done under the items listed in the BID ITEM SHEET shall be in accordance with the measurement and payment section of the relevant City of Worcester Standard Specifications & Details and the MassDOT Standard Specifications for Highways and Bridges (2024) as modified by the special provisions and this specification section.
- 2. All work performed as described in these contract documents will be paid for under one or more of the items listed in the BID ITEM SHEET. All other activities required in connection with performance of the work, including all work required under this Contract, whether described in the contract documents or mandated by applicable codes, permits and laws, will not be separately paid for unless specifically provided for in the BID ITEM SHEET, but will be considered incidental to performance of the overall project.
- 3. Each unit or lump-sum price stated in the BID ITEM SHEET shall constitute full compensation as herein specified for each item of work completed in accordance with the drawings and specifications.
- 4. The payment items listed herein and in the BID ITEM SHEET are intended to provide full payment for the work shown on the drawings and specified herein. Any work called for or implied in the documents but not listed as a payment item shall be considered incidental to the overall project.
- 5. Unless otherwise noted, each item shall be furnished and installed in accordance with the technical section whether a specific applicable payment item exists or not.

#### 1.02 HANDLING EXISTING FLOWS:

Handling existing sewage flows (temporary bypass pumping) in accordance with Section 01575, HANDLING EXISTING FLOWS, including providing, installing, bypass piping trenching, including excavation, backfill, bedding, select material, clearing, crushed stone, grubbing, testing, and removing all required equipment, piping, pumping, restoration of the ground surface, including gravel sub-base, temporary and permanent pavement replacement, and all work incidental thereto and not specifically included for payment under other items as required shall not be separately measured for payment, but shall be considered incidental to the project.

#### 1.03 ENVIRONMENTAL PROTECTION:

The work of Section 01570 - ENVIRONMENTAL PROTECTION shall be paid for at the contract unit bid prices under Items 170 and 171.

#### 1.04 WARRANTY INSPECTION:

All warranty inspections and related work shall not be separately measured for payment but shall be considered incidental to the project.

#### 1.05 DEWATERING:

The work of this section shall not be separately measured for payment, but shall be considered incidental to the project.

#### 1.06 SUPPORT OF EXCAVATION:

The work of this section shall not be separately measured for payment, but shall be considered incidental to the project.

#### 1.07 CONSTRUCTION ZONE SAFETY PLAN:

- 1. The work of this section shall constitute full compensation to the Contractor for the Construction Zone Safety Plan including temporary traffic control signal, safety signing, temporary barrier, temporary pavement markings, temporary illumination, removal of pavement markings, portable changeable message sign, temporary impact attenuator, and all incidental work associated with the construction zone safety plan.
- 2. The work shall be paid for at the contract unit bid prices under Items 619, 628.314, 628.4, 816.81, 852, 853.2, 853.21, 853.8, 854.036, 854.1, 859.

#### 1.08 CONNECTIONS TO EXISTING STRUCTURES:

Connections to existing structures shall be considered incidental to the work and shall not be measured separately for payment.

#### 1.09 DUST CONTROL:

- 1. The work of this section shall constitute full compensation to the Contractor for dust control.
- 2. The work shall be paid for at the contract unit bid prices under Item 150.

#### 1.10 PRICE ADJUSTMENTS MANDATED BY MGL CHAPTER 30, SECTION 38A:

Price adjustments for certain payment items shall be as described in Specification Section 01250 PRICE ADJUSTMENTS. Payment shall be made at the unit prices included in BID ITEM SHEET or, if no such items are contained in BID ITEM SHEET, by change order.

#### **SECTION 00320**

#### SUBSURFACE DATA

#### PART I - GENERAL

#### 1.01 SCOPE:

- A. A subsurface exploration program consisting of soil borings, test pits, geotechnical laboratory testing, and monitoring well installation has been performed, with reasonable care. The following geotechnical report is appended hereto and is for informational purposes as described below:
  - "Geotechnical Engineering Report, Proposed Culvert Replacement of Salisbury Street Culvert, Worcester, Massachusetts" dated December 5, 2022.
- B. The attached subsurface data is provided for informational purposes only. The Contractor shall not rely on the interpretations, opinions, conclusions, or recommendations included in the report, only the factual data relative to the specific times, locations, and depths/elevations. Specific project requirements are referenced only in the drawings and specifications.
- C. If Contractors deem the subsurface information insufficient, they may, after obtaining Owner's permission, carry out additional subsurface explorations, at no expense to the Owner.
- D. Subsurface information provided in the Contract Documents is limited by the methods used for obtaining and expressing such data and is subject to various interpretations. The terms used to describe soils, rock, groundwater, and such other conditions are subject to local usage and individual interpretation.
- E. Borings and test pits have been completed substantially at the locations indicated on the drawings and advanced to the depths shown on the logs. Soil information presented in the boring logs, as to classification, gradation, properties, density and consistency, is based on visual observation of recovered samples. Reported groundwater levels are those measured in the field at the particular location and at the time measurements were made, and do not necessarily represent permanent or seasonal groundwater elevations. Groundwater elevations may be affected by temperature, rainfall, tidal fluctuation, and other factors that may not have been present at the time the measurements were made. The Contractors should be aware that groundwater level fluctuations may affect methods of construction.

01/31/2023 00320-1

F. Subsurface exploration, soil and rock data are for the general information of the Contractors. The Contractors are obligated to examine the site, review boring and test pit logs, all available information and records of explorations, investigations and other pertinent data for the site, and then based upon their own interpretations and investigations decide the character of material to be encountered and excavated, the suitability of the materials to be used for backfilling and such other purposes, the groundwater conditions, difficulties or obstacles likely to be encountered, and other conditions affecting the work. The subsurface data is accurate only at the particular locations and times the subsurface explorations were made. No other warranty either expressed or implied by the Owner, Engineer or their agents is made as to the accuracy of the subsurface information and data shown on the drawings or presented in the Contract Documents.

END OF SECTION

01/31/2023 00320-2

55 Walkers Brook Drive, Suite 100, Reading, MA 01867 Tel: 978.532.1900

## WSE Project No. ENG22-0381

December 5, 2022

Kara Keleher, PE, ENV SP Weston & Sampson 55 Walkers Brook Drive, Suite 100 Reading, MA 01867

Re: Proposed Culvert Replacement of

Salisbury Street Culvert Worcester, Massachusetts

Weston & Sampson is pleased to submit our Geotechnical Engineering Report for the subject project. This report presents a description of our services, a summary of field explorations, descriptions of site and subsurface conditions, and geotechnical recommendations for design and construction of the proposed culvert replacement.

Our services were completed in general accordance with the *Massachusetts Department of Transportation LRFD Bridge Manual*. Our recommendations were developed in general accordance with the *AASHTO LRFD Bridge Design Specifications*.

We appreciate the opportunity to be of service to you. If you have questions concerning this report or require additional information, please contact us at 978-532-1900.

Very truly yours,

WESTON & SAMPSON ENGINEERS, INC.

Hector D Flores, PE

Geotechnical Project Manager

Jennifer MacGregor, PE Geotechnical Team Leader

Weston & Sampson

# **GEOTECHNICAL ENGINEERING REPORT**

## PROPOSED CULVERT REPLACEMENT OF

SALISBURY STREET CULVERT WORCESTER, MASSACHUSETTS

PROJECT FILE No. ENG22-0381



### SUBMITTED TO:

Kara Keleher, PE, ENV SP Weston & Sampson 55 Walkers Brook Drive, Suite 100 Reading, MA 01867

12/5/2022

## PREPARED BY:

Weston & Sampson 55 Walkers Brook Drive, Suite 100 Reading, MA 01867 tel. (978) 532-1900



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## **FIGURES**

Figure 1 Locus Map Figure 2 Site Plan

Figure 3 Cross Sections

## **APPENDICES**

Appendix A Site Photos

Appendix B Boring and Probe Logs

Appendix C Geotechnical Laboratory Test Results

Appendix D Important Information about This Geotechnical-Engineering Report

#### 1.0 EXECUTIVE SUMMARY

This report summarizes our geotechnical evaluation for the proposed Salisbury Street Culvert Replacement project in Worcester, Massachusetts. A dam which impounds a pond between Salisbury Street and the driveway to 646 Salisbury Street is cast against the culvert. Water overflowing the dam is conveyed below Salisbury Street through the culvert. It is understood that the dam is not part of the culvert and is not part of this project.

The proposed project includes replacing the existing culvert with a precast concrete four-sided box culvert structure with concrete wingwalls. The new box structure will have a clear span of about 4 feet. The bottom of the culvert will be at approximately at El. 697 which is approximately 9 feet below the road surface. Several feet of fill will be placed along the bottom of the culvert to match the existing inlet and outlet elevations and provide a more natural stream bed.

Weston & Sampson completed a subsurface exploration program consisting of two (2) standard penetration test borings, four (4) probes, and twelve (12) vacuum test pits to assess the subsurface conditions at the project site. The subsurface conditions generally consisted of fill overlying dense to very dense glacial till deposits. Dry stacked cobble buttresses were encountered on both side of the existing culvert.

Based on the observed subsurface conditions, the proposed rehabilitation is feasible, and the culvert can bear within the glacial till deposits or on compacted Structural Fill placed on the glacial till. Recommended design geotechnical parameters, bearing resistance, lateral pressure recommendations, and construction considerations are provided herein.

### 2.0 INTRODUCTION

#### 2.1 GENERAL

This report summarizes Weston & Sampson's geotechnical evaluation for the proposed Salisbury Street Culvert Replacement project in Worcester, Massachusetts. The existing culvert is located below Salisbury Street northwest of the driveway to 646 Salisbury Street, Worcester, MA, *Figure 1 – Site Locus*. The roadway alignment is oriented approximately northwest to southeast over the culvert, and the stream flows from northeast to southwest.

This report includes a summary of existing and proposed conditions, descriptions of subsurface conditions encountered in our explorations and general geotechnical recommendations for design and construction of the proposed culvert replacement.

This report had been prepared in general accordance with the 2013 Massachusetts Department of Transportation (MassDOT) Load and Resistance Factor Design (LRFD) Bridge Design Manual and January 2020 updates, and the American Association of State Highway and Transportation Officials (AASHTO) LRFD Bridge Design Specifications, Ninth Edition, 2020.

Our project understanding is based on emails and discussions with the design team and an undated preliminary drawings titled "Key Plan & Profile", "General Plan", and "Longitudinal Section" by Weston & Sampson.

Project details including, but not limited to, the proposed structure type, configuration, grading, related site improvements, and proposed construction approach were not finalized at the time of the report. Conclusions and recommendations presented in this report are based on our understanding of the proposed rehabilitation as described herein, subsurface conditions encountered at discrete exploration locations, the provisions of the Limitations section of this report, and the document titled "Important Information about this Geotechnical Engineering Report" by Geoprofessional Business Association (GBA), Inc., enclosed as *Appendix D*. We should be contacted to review and modify our recommendations as necessary as the design is finalized.

## 2.2 SURVEY, DATUM, AND UNITS OF MEASUREMENT

Elevations (El.) referenced in this report are in feet and are based on the North American Vertical Datum of 1988 (NAVD88).

#### 2.3 EXISTING CONDITIONS

The existing culvert is located below Salisbury Street northwest of the driveway to 646 Salisbury Street, Worcester, MA, as shown in *Figure 1 – Locus Map*. The existing culvert is approximately 80 feet in length and connects two unnamed ponds on either side of Salisbury Street as shown in *Figure 2 – Site Plan*. The culvert walls are constructed of mortared stone which support a concrete cap

below the pavement. The inside width of the culvert is approximately 4 feet. The culvert inlet and discharge inverts are at El. 701.4 and 700.4, respectively, which are approximately 5 feet below the road surface. Photos of the existing culvert are included in *Appendix A*.

A dam which impounds a pond between Salisbury Street and the driveway to 646 Salisbury Street is cast against the culvert. Water overflowing the dam is conveyed below Salisbury Street through the culvert. It is understood that the dam is not part of the culvert and is not part of this project.

A water main pipe crosses the culvert along the north shoulder of Salisbury Street. Gas is also located on the north shoulder of Salisbury Street although it is unknown if the gas crosses under the culvert or between the culvert cap and the pavement. A drain line to the west of the culvert discharged into the culvert close to the centerline of Salisbury Street. Sanitary sewer crosses under the culvert along the eastbound lane.

#### 2.4 PROPOSED CONDITIONS

The project includes replacement of the existing culvert with a 4-sided box culvert. The inside of the box culvert is anticipated to be approximately 4-feet-wide and 7-feet-tall with 7-inch-thick walls and top and bottom slabs. The bottom of the culvert will be at approximately at El. 697 which is approximately 9 feet below the below the road surface. Several feet of fill will be placed along the bottom of the culvert to match the existing inlet and outlet elevations and provide a more natural stream bed. The final culvert dimensions and loads were not provided at the time of this report.

#### 3.0 SITE CONDITONS

#### 3.1 GEOLOGY

Information from the United States Geological Survey (USG) "Surficial Material Map of the Worcester North Quandrangle" (2018) compiled by Byron D. Stone, Janet R. Stone, and Mary L. DiGiacomo-Cohen indicates the site is located in an area of Artificial Fill and Thin Till. The till is composed predominantly of nonsorted, nonstratified matrix of sand, some silt, and little clay containing scattered pebble, cobble, and boulder clasts. The till is generally less than 15-feet-thick.

#### 3.2 SUBSURFACE EXPLORATIONS

Subsurface conditions were explored on June 23, 2022 by advancing two (2) standard penetration test (SPT) borings (B-101 and B-102) and four (4) probes (P-1 through P-4); and on and September 12, 2022 by advancing twelve (12) vacuum test pits (V1-1 through V4-4). Approximate exploration locations are shown in *Figure 2*. Weston & Sampson geotechnical engineering staff monitored exploration activities, measured locations using a handheld GPS unit, and prepared logs for the SPT borings and probes.

The SPT borings and probes were completed by Seaboard Drilling, Inc. of Chicopee, MA. SPTs were conducted in the SPT borings by driving a split spoon sampler with an automatic hammer in general accordance with ASTM D1586. The SPT borings extended to a depth of approximately 22 feet below the road surface. The probes were advanced with a hollow stem auger (HSA) to refusal on the exterior rock walls of the existing culvert. Following completion of drilling, the borings and probes were backfilled with cuttings and the surface patched with an asphalt cold patch. Copies of the boring and probe logs along with the Guide to Subsurface Exploration Logs are included in *Appendix B – Boring and Probe Logs*.

The vacuum test pits were completed by New England Boring Contractors, Inc. of Derry, NH. The vacuum borings were advanced to refusal on the exterior rock walls of the existing culvert. Following completion of excavation, the test pits were backfilled with cuttings and the surface patched with an asphalt cold patch. Cross sections based upon subsurface information collected in the vacuum test pits as well as the SPT borings and probes are presented on *Figure 3 – Cross Sections*.

#### 3.3 LABORATORY TESTING

Selected soil samples were submitted to Thielsch Engineering of Cranston, RI for laboratory grain size (ASTM D6913) to confirm field classifications and estimate engineering properties. Laboratory test results are included in the boring logs and in *Appendix C - Laboratory Test Results*.

#### 3.4 SUBSURFACE CONDITIONS

#### 3.4.1 GENERAL

Subsurface conditions encountered in the SPT borings and vacuum test pits generally consisted of pavement and fill underlain by glacial till to the depths explored. The subsurface conditions encountered in the borings were generally consistent with mapped surficial geology. Depths provided herein are relative to the road surface.

Variations in subsurface conditions may occur and should be expected between boring locations. The strata boundaries shown in our boring logs are based on our interpretations and the actual transition may be gradual. Refer to the boring logs provided in *Appendix A* for descriptions of the soil samples collected.

#### 3.4.2 Surface Materials

Each of the explorations encountered 6 to 8 inches of asphalt concrete (AC) pavement at the ground surface.

#### 3.4.3 UNDOCUMENTED FILL

Loose to medium dense fill was encountered below the AC pavement. The fill was generally comprised of varying amounts of fine to coarse sand, fine to coarse gravel, and non-plastic fines (SM and GM). In the vacuum test pits, the granular fill extended to the top of the cobbles forming the existing culvert sidewalls at depths ranging between 17 inches and 44 inches below the road surface as shown on Figure 3. In the SPT borings which were advanced beyond the cobbles forming the existing culvert sidewalls, the granular fill extended to depths ranging from 8 to 8.5 feet below the road surface.

#### 3.4.4 GLACIAL TILL

A glacial till deposit generally consisting of silt overlying sand was encountered below the fill in both SPT borings.

- The upper portion of the glacial till was generally described as stiff to hard, native silt
  comprised of mostly non-plastic fines, few to some fine to coarse gravel, and little to some
  fine to coarse sand, (ML). The silt extended to a depth of about 13.5 feet below road surface
  at both SPT borings. A layer of silt was encountered below the sand in B-102 and extended
  to termination depth at boring B-102 underlying native sand.
- A layer of medium dense to dense sand was encountered below the native silt in both borings. The sand was generally comprised of fine to medium sand with some non-plastic fines and little fine to coarse gravel (SM). The sand extended to a depth of 18.5 feet below grade surface at boring B-102 and to termination depth at boring B-101 at 22 feet.

#### 3.4.5 GROUNDWATER

Groundwater was encountered at a depth of 5.7 feet below grade surface at boring B-101. Seepage was encountered at a depth of 3.5 feet below grade surface at vacuum test pit V2-2. We anticipate that groundwater levels will fluctuate with season, variations in precipitation, construction in the area, and other factors. Perched groundwater conditions could exist close to the ground surface, especially during and after extended periods of wet weather.

#### 3.5 GEOTECHNICAL DESIGN PARAMETERS

Recommended design parameters for the soil encountered in our explorations, as applicable for the project, are summarized in the table below:

Table 3-1: Geotechnical Design Parameters

Design Parameter	Existing Fill	Glacial Till
Angle of Internal Friction (degrees)	30	34
Unit Weight (pcf)	120	120
At-Rest Earth Pressure Coefficient, K <sub>0</sub>	0.5	0.44
Active Earth Pressure Coefficient, K <sub>a</sub>	0.33	0.28
Passive Earth Pressure Coefficient, Kp	3.00	3.54

#### 3.6 SEISMIC CONSIDERATIONS

In accordance with the AASHTO LRFD Bridge Design Specifications and based on the subsurface conditions encountered in our explorations, our geotechnical analyses, and the proposed foundation elevations, the subject project should be evaluated using parameters associated with Site Class D.

#### 4.0 GEOTECHICAL DESIGN RECOMMENDATIONS

#### 4.1 GENERAL

A primary geotechnical consideration for construction of the proposed culvert and related site improvements is the width of the existing culvert. Based visual observations of the existing culvert and conditions encountered in our explorations, we understand that the interior sides of the culvert are constructed of mortared stone buttressed by dry stacked cobbles as show in *Figure 3*. The transition from mortared stone sidewall to the unmortared buttress is unknown at this time. At the north and south shoulders, the dry stacked buttress extended more than 5.5 feet beyond the interior face of the culvert.

In SPT borings B-101 and B-102, which were advanced beyond the limits of the cobble buttress, the fill extended to about 8.5 feet. Auger griding was noted in the logs approximately from 1 to 8 feet below grade surface at B-101 on possible cobbles or boulders within the fill.

Based on the subsurface conditions encountered in the explorations, the proposed culvert, headwall, and wing-walls can be supported by conventional shallow foundations bearing on native, inorganic, undisturbed Glacial Till or on compacted Structural Fill installed above the Glacial Till. All existing fill, organic, loose, or otherwise unsuitable soils, if present, should be removed and replaced within the zone-of-influence (ZOI) of proposed foundations. The ZOI is defined by planes extending 1 foot laterally from the outer edge of the foundation or structure, and then down and away at 1H:1V

(horizontal: vertical) slopes. Stream diversion and groundwater control will be required to remove existing fill and prepare subgrades for shallow foundations.

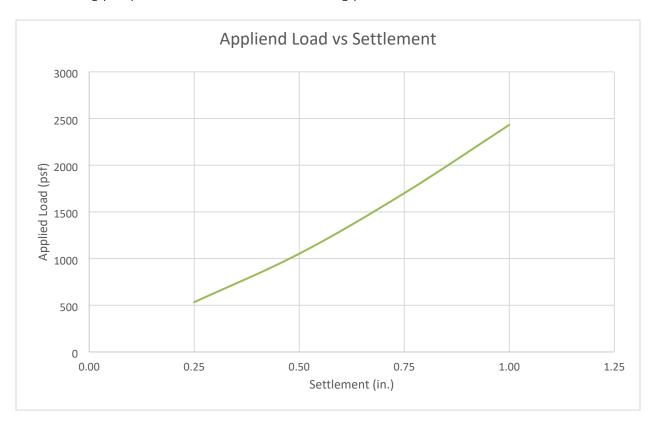
Geotechnical recommendations for design and construction of the proposed improvements are provided in the following sections. Our recommendations are based on preliminary structure details, grades, and assumed conditions as stated herein.

#### 4.2 FOUNDATION RECOMMENDATIONS

Foundations should be designed in accordance with the provisions of the current edition of the American Association of State Highway and Transportation Officials (AASHTO) LRFD Bridge Design Specifications. Footings should be embedded at least 4 feet below the nearest proposed adjacent ground surface exposed to freezing.

The recommended factored limit bearing resistance for a 5.25-feet-wide box culvert bearing on Glacial Till or on Structural Fill placed above such soils is 8,000 pounds per square feet (psf) for the strength limit state and 17,775 psf for the extreme limit state assuming there is no eccentricity. The factored resistance is based on a resistance factor of 0.45 for the Strength limit state and 1.0 for the Extreme limit state in accordance with AASHTO Section 10.5.5.

The following plot provides service limit state bearing pressure versus settlement.



#### 4.3 LATERAL STABILITY

The culvert should be designed to resist lateral loads considering appropriate loading conditions and load combinations as required by AASHTO, including earth pressures, hydrostatic, traffic, wind, seismic, and other loads.

Sliding and overturning stability should be evaluated at the Strength Limit state using a resistance factor of 0.8 per AASHTO Table 10.5.5.2.2-1. For substructure elements backfilled with Structural Fill as recommended herein, lateral earth pressures should be computed per AASHTO Section 3.11.5 based on an angle of internal friction of 35°, a total unit weight of 125 pcf, and an interface friction angle of 22° for soil against precast concrete. A buoyant unit weight of soil of 62.6 pcf can be assumed for soils below the water table.

We recommend that passive pressures acting on the resisting side of the walls be ignored due to the possibility of future removal of streambed material through scour, dredging activities, or other means. Driving forces acting on the culvert can be resisted by friction along the base of the wall footing using a friction coefficient of 0.25 for footings bearing on Glacial Till or 0.40 on Structural Fill overlying such soils.

#### 4.4 SCOUR

The maximum design scour depth is unknown at this time but should be considered when determining the bearing depth of the box culvert, headwalls, and wingwalls.

#### 5.0 GEOTECHNICAL CONSTRUCTION CONSIDERATIONS

#### 5.1 EXCAVATION CONSIDERATIONS

#### 5.1.1 GENERAL

Excavations for the culvert replacement are expected to encounter existing fill, cobble buttresses along the existing culvert, and glacial till. Occasional cobbles and boulders may be encountered within the fill and glacial till, and difficult excavation conditions should be anticipated. If excavations cannot be safely sloped back, temporary excavation support systems should be designed and constructed by the Contractor. Excavation support is the responsibility of the Contractor and should be designed by a Professional Engineer licensed in the Commonwealth of Massachusetts. All excavations should be made in accordance with applicable OSHA and local safety regulations.

#### 5.1.2 TEMPORARY SLOPES AND SLOPE PROTECTION

Temporary excavation slopes might be possible depending on the Contractor's construction approach. During construction, all temporary slopes should be protected from erosion by grading



to divert surface flow away from slope faces. Filter socks or similar erosion protection should be placed along the top of slopes.

#### 5.1.3 TEMPORARY EXCAVATION SUPPORT

Temporary excavation support will be required for depths greater than 4 feet where sloping of the excavation sidewalls is not feasible, and for excavations where groundwater seepage is present. The type and design of the shoring system be the responsibility of the contractor, who is in the best position to choose a system that is coordinated with their overall plan of operation. Design of temporary excavation support should be completed by a structural engineer experienced in shoring design and licensed in the Commonwealth of Massachusetts.

The shoring system should be designed to support lateral earth pressures, construction surcharge loads, unbalanced hydrostatic pressures, and surcharges from adjacent structures and utilities, if present. At a minimum, a lateral temporary construction surcharge of 100 psf should be applied uniformly over the height of the wall. Recommended soil strength parameters for design of excavation support systems are provided in Table 5-1 below.

Table 5-1: Recommended Soil Parameters for Design of Temporary Earth Support

Design Parameter	Existing Fill	Glacial Till
At-Rest Earth Pressure Coefficient, K <sub>0</sub>	0.5	0.44
Active Earth Pressure Coefficient, K <sub>a</sub>	0.33	0.28
Passive Earth Pressure Coefficient, K <sub>p</sub>	3.00	3.54

#### Notes:

- 1. Shoring systems restrained from lateral movement should be designed using at-rest lateral earth pressures. Shoring systems which can be allowed to deflect 1 to 2 percent of the exposed wall height may be designed assuming active earth pressure conditions.
- 2. Passive resistance should be neglected in the two feet below the maximum depth of excavation.
- 3. Lateral earth pressure parameters presented herein pertain to cantilevered (i.e. un-anchored and un-braced) structures, assume a vertical wall, and neglect the effects of friction between the wall and the retained soil.

#### 5.2 WATER CONTROL

Temporary dewatering and flow bypass will be required during construction to maintain a dry condition at the bottom of excavations and provide stable subgrade conditions for installation of

structures and foundations. Dewatering and flow bypass efforts must satisfy the requirements of local, state, and federal environmental and conservation authorities and should be in accordance with MassDOT requirements.

#### 5.2.1 STREAM FLOW MANAGEMENT

The flow through the existing culvert will need to be conveyed through the site during construction. Flow management is an important construction consideration and could impact excavation dewatering for the proposed culvert replacement. Design of the stream flow management plan by the Contractor should consider up to a 2.5-year flood event and also include contingencies for flows in excess of the plan capacity.

#### 5.2.2 DEWATERING

The dewatering system should be capable of lowering the groundwater table at least 2 feet below the anticipated excavation depths and be kept operational until concrete placement and backfilling have been completed. The dewatering system should be capable of adapting to variable flows and be designed by the Contractor. Flow rates for dewatering are likely to vary depending on location, soil type, and the season during which the excavation occurs.

Dewatering methods will depend on several factors, including depth of excavation, localized soil conditions encountered, time of year performed, size of the open excavation and the length of time the excavation remains open. The Contractor should be responsible for selecting dewatering methods based on their proposed methods and equipment used for excavation to achieve the desired objectives (that is, maintaining a dry condition at the bottom of the excavation or within the work area during installation of structures, preparation of stable subgrades, etc.).

Depending on soil and groundwater conditions, and resulting infiltration rates, control of groundwater in excavations after stream diversion can likely be accomplished through pumping from strategically placed sump pits. If sumps are not effective, a wellpoint or other dewatering system may be necessary. Local sump pumps should be surrounded by ¾-inch crushed stone wrapped in non-woven filter fabric to reduce migration of fines and be placed beyond the ZOI of new foundations.

#### 5.3 SITE PREPARATION

All fill, any organics, and existing structures should be removed from the proposed box culvert and wing-wall footing areas and from within the ZOI below the footings.

Cobbles and boulders should be removed to a minimum depth of 1 foot below the proposed box culvert and wing-wall subgrades.

### 5.4 SUBGRADE PREPARATION AND PROTECTION

Preparation of subgrades, including excavation and disposal of surplus material, should be completed in accordance with Section 100 of the MassDOT Standard Specifications. Weston & Sampson should be contacted to evaluate subgrades during earthwork activities and prior to placement of forms and rebar. Based on the subgrade conditions described above, excavations will extend through fill and cobbles. All existing fill and cobbles should be removed from within the ZOI below proposed footings, and the resulting excavation should be backfilled with compacted Structural Fill. Soft and/or disturbed areas will also require over-excavation and backfilling Structural Fill.

A geosynthetic separation layer between the excavation subgrade and Structural Fill may also be required. We recommend that a geosynthetic used for separation consist of a non-woven geosynthetic with an AOS of #70 to #100 sieve, and a minimum puncture resistance of at least 500 pounds (such as Mirafi 180N or equivalent).

Fill placement and concrete construction should not be completed over frozen subgrades. All frozen and frost penetrated materials should be removed prior to placement and compaction of overlying materials or forms and rebar. If foundation construction occurs during freezing conditions, insulating blankets, heaters, or other suitable measures should be employed to prevent foundation subgrades from freezing until the foundations are backfilled sufficiently to prevent frost from reaching the footing subgrades.

Subgrade protection is the responsibility of the Contractor and precautions and protective measures appropriate for the weather conditions during construction should be used during earthwork and foundation construction to preserve the integrity and condition of subgrades. Soils containing more than trace amounts of silt are highly susceptible to softening and disturbance by construction activity during wet or freezing weather. Construction traffic should not operate directly on prepared subgrades. Earthwork during wet periods will require extra effort and caution by the Contractor. Ponded water should be pumped out of excavations and subgrade areas immediately. To reduce disturbance and loosening of subgrade soils due to foot traffic during construction, a few inches of crushed stone can be placed and compacted at the base of foundation excavations.

#### 5.5 BACKFILL PLACEMENT AND COMPACTION

Backfill operations should be completed in accordance with Section 400 of the MassDOT Standard Specifications. Structural Fill should be used as backfill below the box culvert and footing; behind culvert sidewalls and wing-walls; and up to the pavement subbase elevation. Structural Fill should consist of imported, granular soil free from organic matter, clay, and deleterious materials, and should conform to the requirements for Section M.1.03.0 (Type B Gravel Borrow) or M2.01.7 (Dense Graded Crushed Stone) of the MassDOT Standard Specifications. Structural Fill should be

compacted to a minimum 95 percent of the materials Maximum Dry Density as determined by AASHTO T 180.

On-site granular soils meeting the requirements of Section M.1.03.0 or M2.01.7 of the MassDOT Standard Specifications may be reused as structure backfill. On-site granular soils containing less than approximately 20 percent fines and free of organics, contamination (including metals, VOCs, SVOCs, etc.), and other deleterious materials may be suitable for use as fill in areas outside proposed foundation areas (i.e., Common Fill) if properly moisture conditioned. Moisture conditioning, if required, could consist of drying by scarification and frequent mixing in thin lifts during warm, dry conditions. Based on review of soil samples obtained from the borings, we anticipate that some of the native sand and gravel soils may possibly be suitable for re-use.

#### 6.0 LIMITATIONS

We have prepared this report for use by the City of Worcester and the design and construction teams for this project and site only. The information herein can be used for bidding or estimating purposes but should not be construed as a warranty of subsurface conditions. We have made observations only at the aforementioned locations and only to the stated depths. These observations do not reflect soil types, strata thicknesses, water levels or seepage that may exist between observations. For important information on the use of this report, please refer to *Appendix C* for the document titled "Important Information about This Geotechnical-Engineering Report."

Weston & Sampson should be retained to observe site preparation, subgrade preparation, and fill placement and compaction. Earthwork observation and quality control testing of fill and backfill densities is critical throughout construction. We should also be retained to review final design and specifications to see that our recommendations are suitably followed. If any changes are made to the anticipated locations, loads, grading, configurations, or construction timing, our recommendations may not be applicable, and we should be consulted. We should also review Contractor prepared submittals for backfill materials, temporary excavation support (if required) and dewatering.

The preceding recommendations should be considered preliminary, as actual soil conditions may vary. For our recommendations to be final, we should be retained to observe actual subsurface conditions encountered. Our observations will allow us to interpret actual conditions and adapt our recommendations if needed.

Within the limitations of scope, schedule and budget, this geotechnical report has been completed in accordance with the generally accepted practices in this area at the time this report was prepared. No warranty, expressed or implied, is given.

P:\MA\Worcester MA\2220381 Salisbury Street Culvert Design\Geotech\5.0 report\Salisbury St Culvert\_Geotech Report.docx



## **FIGURES**







## FIGURE 1 LOCUS MAP

SALISBURY STREET CULVERT REPLACEMENT CITY OF WORCESTER, MA WORCESTER COUNTY

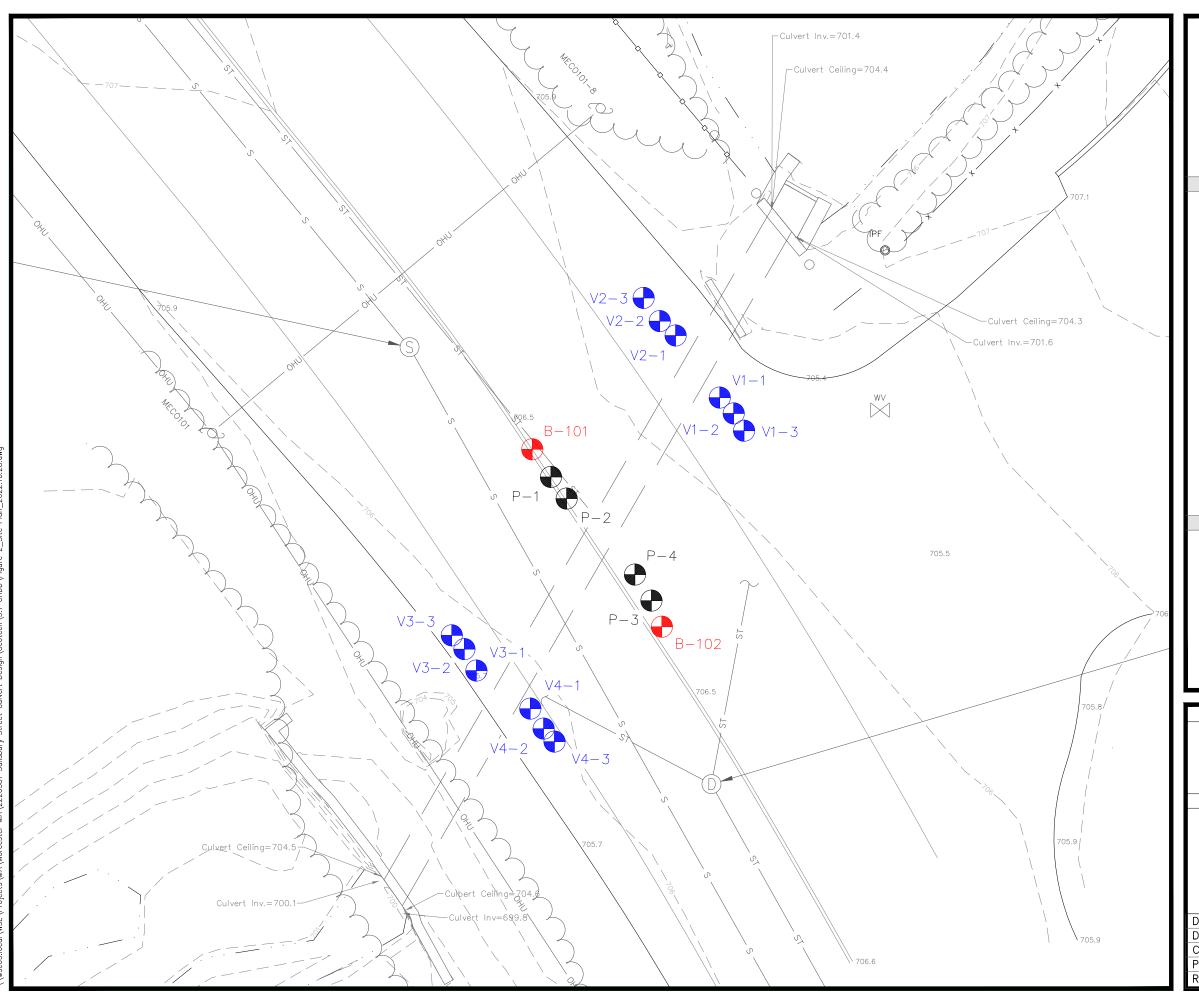
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Weston & Sampson Engineers, Inc. 55 Walkers Brook Drive, Suite 100 Reading, MA 01867

978.532.1900

800.SAMPSON

www.westonandsampson.com

#### NOTES

- 1. THIS PLAN WAS PREPARED USING AN UNDATED PRELIMINARY DRAWING TITLED, "EXISTING CONDITIONS PLAN", PREPARED BY WESTON & SAMPSON ENGINEERS.
- 2. BORING, PROBE, AND VACUUM BORING LOCATIONS SHOWN ARE APPROXIMATE AND BASED ON FIELD MEASUREMENTS RELATIVE TO EXISTING SITE FEATURES.
- 3. SPT BORINGS AND PROBES WERE COMPLETED BY SEABOARD DRILLING, INC. OF CHICOPEE, MASSACHUSETTS AND OBSERVED BY WESTON & SAMPSON ENGINEERS ON JUNE 23, 2022.
- 4. VACUUM BORINGS WERE COMPLETED BY NEW ENGLAND BORING COMPANY, INC. OF DERRY, NEW HAMPSHIRE AND OBSERVED BY WESTON & SAMPSON ENGINEERS ON SEPTEMBER 23, 2022.

#### LEGEND

B-#

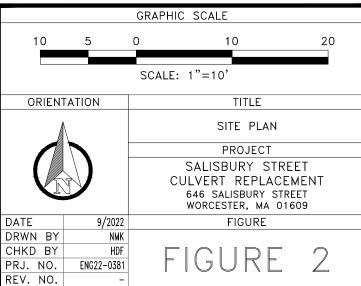
DESIGNATION AND APPROXIMATE LOCATION OF SPT



DESIGNATION AND APPROXIMATE LOCATION OF PROBE



DESIGNATION AND APPROXIMATE LOCATION OF VACUUM TEST PIT





PROJECT: ENG 22-0381

Salisbury Street Culvert Replacement DATE: 10/12/2022 PAGE: 1
BY: HDF

CHKD BY:

V2-3 V2-2 V2-1

Fill

Fill

Cobble Buttress

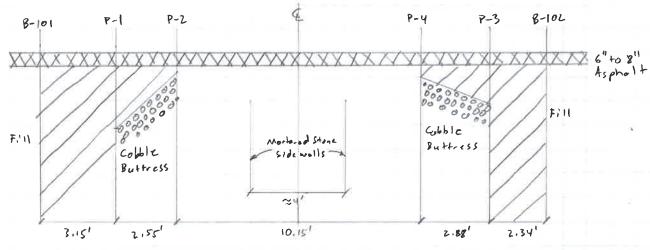
Cobble Buttress

Cobble Buttress

Cobble Buttress

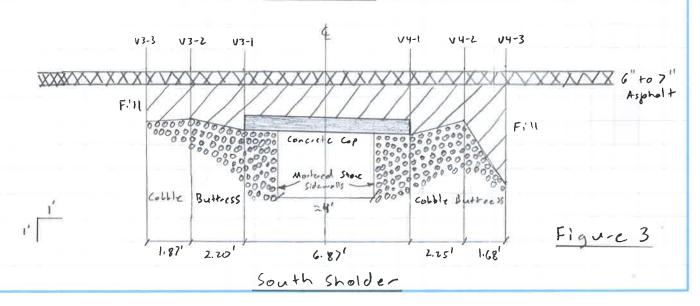
Cobble Buttress

# North Shoulder



Note: The concrete cop was not exposed at this location.

Centerline



## APPENDIX A

Site Photos



Photo 1: Upstream culvert entrance and adjacent dam.



Photo 2: Downstream culvert outlet.





**Photo 3:** Inside of culvert looking upstream with rock and mortar walls and concrete cap.



**Photo 4:** Inside of culvert looking downstream with rock and mortar walls and concrete cap.





**Photo 5:** Water and gas utilities crossing culvert at north shoulder/lane of Salisbury Street.



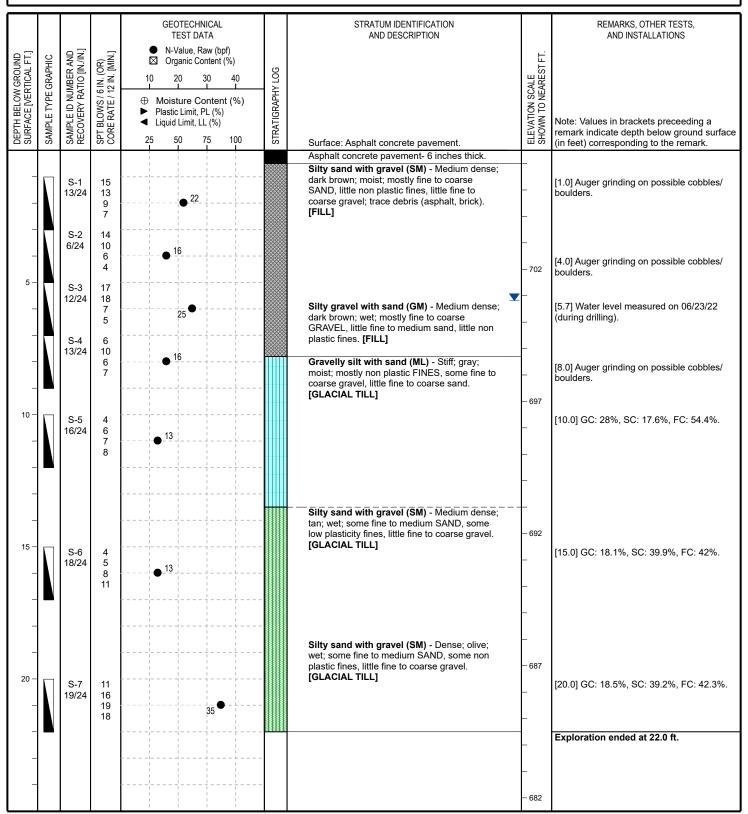
Photo 6: Water and sewer utilities at south shoulder/lane of Salisbury Street.



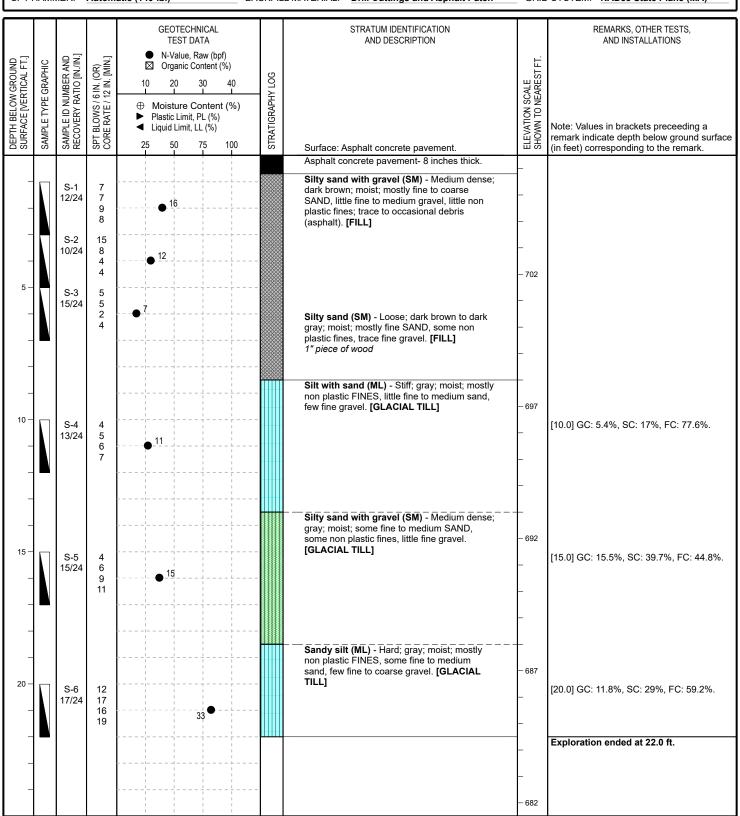
APPENDIX B

Boring and Probe Logs

#### Weston(&)Sampson Salisbury Street Culvert Replacement **BORING ID: B-101** Worcester, MA WSE Project: ENG22-0381 Page 1 of 1 CONTRACTOR: Seaboard Drilling, Inc. **BORING LOCATION:** See attached figure DATE START: June 23, 2022 FOREMAN: ADVANCE METHOD: D. Griffon **Hollow-Stem Auger Drilling** DATE FINISH: June 23, 2022 LOGGED BY: AUGER DIAMETER: 4-1/4" ID (Stem), 7-5/8" OD (Flights) **GROUND EL:** J. Westgate, EIT 706.5 ± (NAVD88) CHECKED BY: H. Flores, PE SUPPORT CASING: N/A FINAL DEPTH: 22.0 ft. EQUIPMENT: **Truck Mounted Drill Rig** CORING METHOD: GRID COORDS: N:564762.3450 / E:2933207.3480 SPT HAMMER: Automatic (140-lb.) BACKFILL MATERIAL: **Drill Cuttings and Asphalt Patch** GRID SYSTEM: NAD83 State Plane (MA)

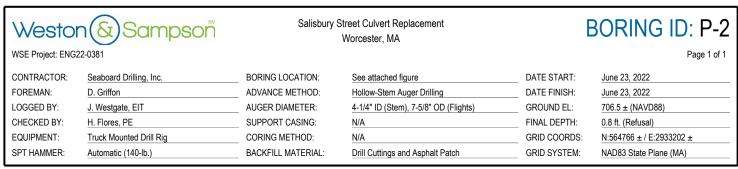


#### Weston(&)Sampson Salisbury Street Culvert Replacement **BORING ID: B-102** Worcester, MA WSE Project: ENG22-0381 Page 1 of 1 CONTRACTOR: Seaboard Drilling, Inc. **BORING LOCATION:** See attached figure DATE START: June 23, 2022 FOREMAN: ADVANCE METHOD: D. Griffon **Hollow-Stem Auger Drilling** DATE FINISH: June 23, 2022 LOGGED BY: AUGER DIAMETER: 4-1/4" ID (Stem), 7-5/8" OD (Flights) **GROUND EL:** J. Westgate, EIT 706.5 ± (NAVD88) CHECKED BY: H. Flores, PE SUPPORT CASING: N/A FINAL DEPTH: 22.0 ft. EQUIPMENT: **Truck Mounted Drill Rig** CORING METHOD: GRID COORDS: N:564775.8477 / E:2933188.8790 SPT HAMMER: Automatic (140-lb.) BACKFILL MATERIAL: **Drill Cuttings and Asphalt Patch** GRID SYSTEM: NAD83 State Plane (MA)

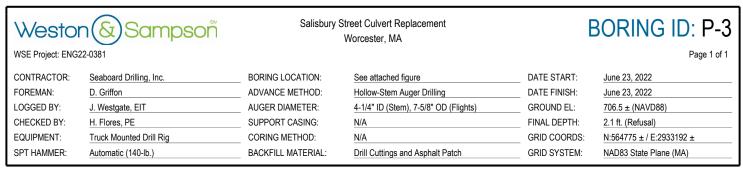


#### **BORING ID: P-1** Sampson Salisbury Street Culvert Replacement Weston(&) Worcester, MA WSE Project: ENG22-0381 Page 1 of 1 CONTRACTOR: Seaboard Drilling, Inc. BORING LOCATION: See attached figure DATE START: June 23, 2022 FOREMAN: D. Griffon ADVANCE METHOD: Hollow-Stem Auger Drilling DATE FINISH: June 23, 2022 LOGGED BY: 4-1/4" ID (Stem), 7-5/8" OD (Flights) J. Westgate, EIT AUGER DIAMETER: GROUND EL: 706.5 ± (NAVD88) CHECKED BY: H. Flores, PE SUPPORT CASING: FINAL DEPTH: 3.1 ft. (Refusal) EQUIPMENT: Truck Mounted Drill Rig CORING METHOD: GRID COORDS: N:564764 ± / E:2933204 ± SPT HAMMER: Automatic (140-lb.) BACKFILL MATERIAL: Drill Cuttings and Asphalt Patch GRID SYSTEM: NAD83 State Plane (MA)

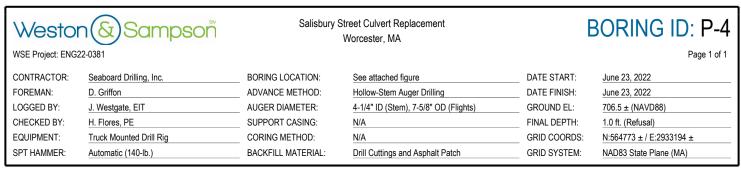
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DEPTH BELOW GROUND SURFACE [VERTICAL FT.]	SAMPLE TYPE GRAPHIC	SAMPLE ID NUMBER AND RECOVERY RATIO [IN./IN.]	STRATIGRAPHY LOG	Surface: Asphalt concrete pavement.	ELEVATION SCALE SHOWN TO NEAREST FT.	Note: Values in brackets preceeding a remark indicate depth below ground surface (in feet) corresponding to the remark.
=				Asphalt concrete pavement- 7 inches thick.  Refer to B-101 for soil conditions.	_	
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DEPTH BELOW GROUND SURFACE [VERTICAL FT.]	SAMPLE TYPE GRAPHIC	SAMPLE ID NUMBER AND RECOVERY RATIO [IN./IN.]	STRATIGRAPHY LOG	Surface: Asphalt concrete pavement.	ELEVATION SCALE SHOWN TO NEAREST FT.	Note: Values in brackets preceeding a remark indicate depth below ground surface (in feet) corresponding to the remark.
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				Asphalt concrete pavement- 8 inches thick.	-	
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#### **GUIDE TO SUBSURFACE EXPLORATION LOGS**



#### **INDEX SHEET 1 GENERAL INFORMATION**

#### **GENERAL NOTES AND USE OF LOGS**

- 1.) Explorations were made by ordinary and conventional methods and with care adequate for Weston & Sampson's study and/or design purposes. The exploration logs are part of a specific report prepared by Weston & Sampson for the referenced project and client, and are an integral part of that report. Information and interpretations are subject to the explanations and limitations stated in the report. Weston & Sampson is not responsible for any interpretations, assumptions, projections, or interpolations made by others.
- 2.) Exploration logs represent general conditions observed at the point of exploration on the date(s) stated. Boundary lines separating soil and rock layers (strata) represent approximate boundaries only and are shown as solid lines where observed and dashed lines where inferred based on drilling action. Actual transitions may be gradual and changes may occur over time.
- 3.) Soil and rock descriptions are based on visual-manual examination of recovered samples, direct observation in test pits (when permissible), and laboratory testing (when conducted).
- 4.) Water level observations were made at the times and under the conditions stated. Fluctuations should be be expected to vary with seasons and other factors. Use of fluids during drilling may affect water level observations. The absence of water level observations does not necessarily mean the exploration was dry or that subsurface water will not be encountered during construction.
- 5.) Standard split spoon samplers may not recover particles with any dimension larger than 1-3/8 inches. Reported gravel conditions or poor sample recovery may not reflect actual in-situ conditions.
- 6.) Sections of this guide provide a general overview of Weston & Sampson's practices and procedures for identifying and describing soil and rock. These procedures are predominantly based on ASTM D2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedures), the International Society of Rock Mechanics (ISRM) standards, and the *Engineering Geology Field Manual* published by the Bureau of Reclamation. Not all aspects of this guide relating to description and identification procedures of soil and rock may be applicable in all circumstances.

#### SAMPLER GRAPHICS

Split Spoon (Standard) 2" OD, 1-3/8" ID

Split Spoon (Oversize) 3" OD, 2-3/8" ID

Shelby or Piston Tube 3" OD, 2-7/8" ID

Double-Tube Rock Core Barrel 2" Core Diameter

Direct Push with Acetate Liner Various Liner Sizes

Auger Sample (from cuttings or hand auger)

Grab Sample G (manual, from discrete point)

Composite Sample (multiple grab samples)

#### **WELL GRAPHICS**

Cement concrete seal around casing or riser pipe

Bentonite seal around casing or riser pipe

Cement grout seal around casing or riser pipe

Soil backfill around riser pipe or beneath screen

Gravel backfill around screen or riser pipe

Sand backfill around screen or riser pipe (filter sand)

Solid-wall riser; Sch. 40 PVC, 1" ID unless noted otherwise

Slotted screen; Sch. 40 PVC,

1" ID with machined slots

#### **CAVING / SEEPAGE TERMS**

The following caving and/or seepage terms may appear on a test pit log.

Caving Term	Criteria
Minor	less than 1 cubic ft.
Seepage Term	less than 1 gpm
Moderate	1 to 3 gpm

Fast..... greater than 3 gpm

#### **KEY TO WATER LEVELS**

Observed in exploration during advancement.

Measured in exploration at completion, prior to backfilling or well installation.

Measured in exploration after the stated stabilization period, prior to backfilling, or in well installation if noted.

#### **DEFINITIONS OF COMMON TERMS**

Sample Recovery Ratio - The length of material recovered in a drive or push type sampler over the length of sampler penetration, in inches (e.g. 18/24).

Standard Penetration Test (SPT) - An in-situ test where a standard split-spoon sampler is driven a distance of 12 or 18 inches (after an initial 6-inch seating interval) using a 140-lb. hammer falling 30 inches for each blow.

SPT Blows - The number of hammer blows required to drive a split-spoon sampler each consecutive 6-inch interval during a Standard Penetration Test. If no discernable advancement of a split spoon sampler is made after 50 consecutive hammer blows, 50/X indicates sampler refusal and is the number of blows required to drive the sampler X inches.

SPT N-Value (N) - The uncorrected blow count representation of a soil's penetration resistance over a 12-inch interval after an initial 6-in. seating interval, reported in blows per foot (bpf). The N-value is correlated to soil engineering properties.

Auger Refusal - No discernable advancement of the auger over a period of 5 minutes with full rig down pressure applied.

Casing Refusal (Driven) - Casing penetration of less than 6 inches after a minimum 50 blows of a drop hammer weighing 300 lbs. or a minimum 100 blows of a drop hammer weighing 140 lbs.

PID Measurement - A measurement (electronic reading) taken in the field using a photoionization detector (PID) to detect the presence of volatile organic compounds in a soil sample. Values are reported as benzene equivalent units in parts per million (ppm) unless noted otherwise.

Rock Quality Designation (RQD) - A qualitative index measure of the degree of jointing and fracture of a rock core taken from a borehole. The RQD is defined as the sum length of solid core pieces 4 inches or longer divided by the run (cored) length, expressed as a percentage. Higher RQD values may indicate fewer joints and fractures in the rock mass.

Fill (Made Ground) - A deposit of soil and/or artificial waste materials that has been placed or altered by human processes.

#### LABORATORY TESTS AND FIELD MEASUREMENTS

MC OC PL	.Organic Content	IC1D Incremental Consolidation VSLaboratory Vane Shear USUnconfined Compression
LL	Liquid LimitGravel Content Sand Content Fines Content	TCTriaxial Compression PPPocket (Hand) Penetrometer TVTorvane (Hand Vane) PIDPhotoionization Detector FIDFlame Ionization Detector

#### **BORING ADVANCEMENT METHODS**

Hollow-Stem Auger Drilling - Utilizes continuous flight auger sections with hollow stems to advance the borehole. Drill rods and a plug are inserted into the auger stem to prevent the entrance of soil cuttings into the augers.

Rotary Wash Drilling - Utilizes downward pressure and rotary action applied to a non-coring bit while washing the cuttings to the surface using a circulating fluid injected down the drill rods. The borehole is supported with either steel casing or the drilling fluid. Where a casing is used, the borehole is advanced sequentially by driving the casing to the desired depth and then cleaning out the casing. The process of driving and cleaning the casing is commonly referred to as the 'drive-and-wash' technique.

Continuous Sampling - Includes a variety of methods and procedures during which the borehole is advanced via continuous recovery of soil samples. Direct Push sampling is a common method that uses static downward pressure combined with percussive energy to drive a steel mandrel into the ground at continuous intervals while recovering soil samples in disposable acetate liners.

Rock Coring - Utilizes downward pressure and rotary action applied to a core barrel equipped with a diamond-set or tungsten carbide coring bit. During conventional coring, the entire barrel is retrieved from the hole upon completion of a core run. Wireline coring allows for removal of the inner barrel assembly containing the actual core while the the drill rods and outer barrel remain in the hole. Various types and sizes of core barrels and bits are used.

#### **GUIDE TO SUBSURFACE EXPLORATION LOGS**



#### **INDEX SHEET 2** SOIL DESCRIPTION

#### **SOIL CONSTITUENTS**

Naturally occurring soils consist of one or more of the following matrix constituents defined in terms of particle size.

Constitu	uent	U.S. Sieve Siz	:e	Observed Size (in.)		
Gravel	(Coarse)	3/4 in 3	3 in.	3/4 -	3	
Gravel	(Fine)	No. 4 - 3	3/4 in.	1/5 -	3/4	
Sand	(Coarse)	No. 10 - N	√o. 40	1/16 -	1/5	
Sand	(Medium)	No. 40 - N	√o. 10	1/64 -	1/16	
Sand	(Fine)	No. 200 - N	√o. 40	1/300 -	1/64	
Fines	(Silt or Clay)	Smaller than N	√o. 200	Less than	1/300	

#### **SOIL IDENTIFICATION**

Soil identification refers to the grouping of soils with similar physical characteristics into a category defined by a **group name** and corresponding **group symbol** based on estimation of the matrix soil constituents to the nearest 5% and simple manual tests. Proportions of cobbles, boulders, and other non-matrix soil materials are not considered during this procedure but are included in the overall soil description if observed or thought to be present. Refer to the following descriptions and tables adapted from ASTM D2488.

Coarse-Grained Soil - Coarse-grained soils contain fewer than 50% fines and are identified based on the following table.

Primary	Fines	Type of Fines		Group	Group
Constituent	Percent	and Gradation		Symbol	Name (1)
GRAVEL	≤ 5%	well gra	nded	GW	Well graded gravel
% gravel		poorly g	graded	GP	Poorly graded gravel
>	10%	clayey	well graded	GW-GC	Well graded gravel with clay
% sand		fines	poorly graded	GP-GC	Poorly graded gravel with clay
		silty	well graded	GW-GM	Well graded gravel wth silt
		fines	poorly graded	GP-GM	Poorly graded gravel with silt
	15% to	clay fines		GC	Clayey gravel
	45%	silt fine	S	GM	Silty gravel
SAND	≤ 5%	well graded		SW	Well graded sand
% sand		poorly g	graded	SP	Poorly graded sand
≥	10%	clayey	well graded	SW-SC	Well graded sand with clay
% gravel		fines	poorly graded	SP-SC	Poorly graded sand with clay
3		silty	well graded	SW-SM	Well graded sand with silt
		fines	poorly graded	SP-SM	Poorly graded sand with silt
	15% to	clay fine	es	SC	Clayey sand
	45%	silt fine	S	SM	Silty sand

(1) If soil is a gravel and contains 15% or more sand, add "with sand" to the group name. If soil is a sand and contains 15% of more gravel, add "with gravel" to the group name.

Inorganic Fine-Grained Soil - Fine-grained soils contain 50% or more fines and are identified based on the following table.

•							
Dry	Coarse F	raction	Group	Group			
Strength	S = Sand	l, G = Gravel	Symbol	Name (1)			
Medium	< 15% S	+ G	CL	Lean clay			
to high	≥ 30%	% S ≥ % G	CL	Sandy lean clay			
	S + G	% S < % G	CL	Gravelly lean clay			
None	< 15% S	+ G	ML	Silt			
to low	≥ 30%	% S ≥ % G	ML	Sandy silt			
	S + G	% S < % G	ML	Gravelly silt			
High to	< 15% S + G		CH	Fat clay			
very high	≥ 30%	% S ≥ % G	CH	Sandy fat clay			
	S + G	% S < % G	CH	Gravelly fat clay			
Low to	< 15% S + G		MH	Elastic silt			
medium	≥ 30%	% S ≥ % G	MH	Sandy elastic silt			
	S + G	% S < % G	MH	Gravelly elastic silt			
	Strength Medium to high None to low High to very high Low to	Strength   S = Sand					

(1) If soil contains 15% to 25% sand or gravel, add "with sand" or "with gravel" to the group name.

Organic Fine-Grained Soil - Fine-grained soils that contain enough organic particles to influence the soil properties are identified as Organic Soil and assigned the group symbol OL or OH.

Highly Organic Soil (Peat) - Soils composed primarily of plant remains in various stages of decomposition are identified as Peat and given the group symbol PT. Peat usually has an organic odor, a dark brown to black color, and a texture ranging from fibrous (original plant structure intact or mostly intact) to amorphous (plant structure decomposed to fine particles).

#### **SOIL DESCRIPTION**

Soils are described in the following general sequence. Deviations may occur in some instances

#### **Identification Components**

(1) Group Name and Group Symbol

#### **Description Components**

- Consistency (Fine-Grained) or Apparent Density (Coarse-Grained)
- Color (note, the term "to" may be used to indicate a gradational change)
- Soil Moisture

- Matrix Soil Constituents (Gravel, Sand, Fines)
  - Proportion (by weight), particle size, plasticity of fines, angularity, etc.
- (6) Non-Matrix Soil Materials and Proportions (by volume)
- (7) Other Descriptive Information (Unusual Odor, Structure, Texture, etc.)
- (8) [Geologic Formation Name or Soil Survey Unit]

SPT N-VALUE CORRELATIONS							
Consistency	SPT N-Value	Apparent Density	SPT N-Value				
Very soft	0 - 2	Very loose	0 - 5				
Soft	2 - 4	Loose	5 - 10				
Medium stiff	4 - 8	Medium dense	10 - 30				
Stiff	8 - 15	Dense	30 - 50				
Very stiff	15 - 30	Very dense	> 50				
Hard	> 30	•					

SOIL MOISTURE					
Moist	Apparent absence of moisture; dry to the touch. Damp but no visible water. Visible free water; saturated.				

#### PROPORTIONS / PERCENTAGES

Proportions of gravel, sand, and fines (excluding cobbles, boulders, and other constituents) are stated in the following terms indicating a range of percentages by weight (to nearest 5%) of the minus 3-in. soil fraction and add up to 100%.

Mostly	50%	-	100%
Some			
Little	15%	-	25%
Few	5%	-	10%
Trace	Less	tha	n 5%

Proportions of cobbles, boulders, and other non-matrix soil materials including artificial debris, roots, plant fibers, etc. are stated in the following terms indicating a range of percentages by volume (to the nearest 5%) of the total soil.

Numerous	40%	-	50%
Common	25%	-	35%
Occasional	10%	-	20%
Trace	Less	thar	n 5%

	PLASTICITY (FINES ONLY)
Non-plastic	Dry specimen ball falls apart easily. Cannot be rolled into thread at any moisture content.
Low	Dry specimen ball easily crushed with fingers. Can be
	rolled into 1/8-in. thread with some difficulty.
Medium	Difficult to crush dry specimen ball with fingers.
	Easily rolled into 1/8-in. thread.
High	Cannot crush dry specimen ball with fingers. Easily
	rolled and re-rolled into 1/8-in. thread.

#### **COBBLES AND BOULDERS**

Cobbles - Particles of rock that will pass a 12-in. square opening and be retained on a 3-in. sieve.

Boulders - Particles of rock that will not pass a 12-in. square opening.

Note: Where the percentage (by volume) of cobbles and/or boulders cannot be accurately or reliably estimated, the terms "with cobbles", "with boulders", or "with cobbles and boulders" may be used to indicate observed or inferred presence.

# GUIDE TO SUBSURFACE EXPLORATION LOGS



# INDEX SHEET 3 ROCK DESCRIPTION

#### **ROCK DEFINITION**

Where reported on an exploration log, *rock* is defined as any naturally formed aggregate of mineral matter occurring in larges masses or fragments. This definition of rock should not be taken as a replacement for any definitions relating to rock and/or rock excavation defined in construction documents. Intensely weathered or decomposed rock that is friable and can be reduced to gravel size particles or smaller by normal hand pressure is identified and described as soil. Poorly indurated formational materials which display both rock-like and soil-like properties are identified and described as rock followed by the soil description. In such cases, the term "poorly indurated" or "weakly cemented" is added to the rock name (e.g. weakly cemented sandstone).

#### **ROCK IDENTIFICATION**

Rock is identified by a combination of *rock type* (igneous, metamorphic, or sedimentary) followed by the the *rock name* (e.g. granite, schist, sandstone).

#### **ROCK DESCRIPTION**

Rock descriptions are presented in the following general sequence. The detail of description is dictated by the complexity and objectives of the project.

#### **Identification Components**

(1) Rock Type and Name

#### **Description Components**

- (2) Rock Grain Size (for clastic sedimentary rock)
- (3) Crystal Size (for igneous and metamorphic rock)
- (4) Bedding Spacing (for sedimentary rock)
- (5) Color
- (6) Hardness and Weathering Descriptors
- (7) Fracture Density
- (8) [Geologic Formation Name]

#### **ROCK QUALITY DESIGNATION**

RQD (%) =  $\frac{\sum \text{Length of intact core pieces} \ge 4 \text{ inches}}{\text{Total length of core run (inches)}} \times 100$ 

The RQD should correlate with the fracture density in most cases. Higher RDQ values generally indicate fewer joints and fractures.

#### **GRAIN / CRYSTAL SIZE**

#### **Grain Size for Clastic Sedimentary Rock**

The names of clastic sedimentary rocks are generally based on their predominant clast or grain size (e.g. fine sandstone, medium sandstone, coarse gravel conglomerate, cobble conglomerate, siltstone, claystone).

#### Crystal Size for Igneous and Metamorphic Rock

Grain Size Description	Average Crystal Size (in.)
Very coarse grained (pegmatitic)	Greater than or equal to 3/8
Coarse-grained	Between 3/16 and 3/8
Medium-grained	Between 1/32 and 3/16
Fine-grained	Between 1/250 and 1/32
Aphanitic	Less than or equal to 1/250

#### **BEDDING SPACING**

Bedding Description	Thickness / Spacing	
Massive	Less than 10 ft.	
Very thickly bedded	3 ft. to 10 ft.	
Thickly bedded	1 ft. to 3 ft.	
Moderately bedded	4 in. to 1 ft.	
Thinly bedded	1 in. to 4 in.	
Very thinly bedded	1/4 in. to 1 in.	
Laminated	Less than 1/4 in.	

Note: Bedding is generally only applicable to sedimentary or bedded volcanic rocks.

#### **HARDNESS**

Hardness	Criteria
Extremely hard	Cannot be scratched with a pocketknife or sharp pick. Can only be chipped with repeated heavy hammer blows.
Very hard	Cannot be scratched with a pocketknife or sharp pick with difficulty. Breaks with repeated heavy hammer blows.
Hard	Can be scratched with with a pocketknife or sharp pick with difficulty. Breaks with heavy hammer blows.
Moderately hard	Can be scratched with a pocketknife or sharp pick with light or moderate pressure. Breaks with moderate hammer blows.
Moderately soft	Can be grooved 1/16 in. deep with a pocketknife or sharp pick with moderate or heavy pressure. Breaks with light hammer blow or heavy manual pressure.
Soft	Can be grooved or gouged easily with a pocketknife or sharp pick. Breaks with light to moderate manual pressure.
Very soft	Can be readily indented, grooved, or gouged with fingernail, or carved with a pocketknife. Breaks with light manual pressure.

#### **WEATHERING (INTACT ROCK)**

Weathering	Discoloration and/or	General
Description	Oxidation	Characteristics
Fresh	Body of rock and fracture	Rock texture unchanged.
	surfaces are not discolored or	Hammer rings when crystalline
	oxidized.	rocks are struck.
Slightly	Discoloration or oxidation	Rock texture preserved.
weathered	limited to surface of, or short	Hammer rings when crystalline
	distance from, fractures. Most	rocks are struck. Body of rock
	surfaces exhibit minor to	not weakened.
	complete discoloration.	
Moderately	Discoloration or oxidation	Rock texture generally
weathered	extends usually throughout.	preserved. Hammer does not
	Fe-Mg minerals appear rusty.	ring when rock is struck. Body
	All fracture surfaces are	of rock slightly weakened.
	discolored or oxidized.	
Intensely	Discoloration or oxidation	Rock texture altered by
weathered	throughout. Feldspar and	chemical disintegration. Can
	Fe-Mg minerals altered to	usually be broken with
	clay to some extent. All fracture surfaces are	moderate to heavy manual
		pressure or by light hammer
	discolored or oxidized and	blow . Body of rock is
	friable.	significantly weakened.
Decomposed	Discoloration or oxidation	Resembles a soil; partial or
	throughout but resistant	complete remnant rock
	minerals such as quartz may	structure may be preserved.
	be unaltered. All feldspar and	Can be granulated by hand.
	Fe-Mg minerals are	Resistant minerals may
	completely altered to clay.	present as stringers or dikes.

#### FRACTURE DENSITY

December 2	Observed Freshus Density
Description	Observed Fracture Density
Unfractured	No fractures
Very slightly fractured	Core lengths greater than 3 ft.
Slightly fractured	Core lengths mostly from 1 ft. to 3 ft.
Moderately fractured	Core lengths mostly from 4 in. to 1 ft.
Intensely fractured	Core lengths mostly from 1 in. to 4 in.
Very intensely fractured	Mostly chips and fragments

Note: Fracture density is based on the fracture spacing in recovered core, measured along the core axis (excluding mechanical breaks).

#### APPENDIX C

Laboratory Test Results



195 Frances Avenue Cranston RI, 02910 Phone: (401)-467-6454 Fax: (401)-467-2398 thielsch.com Let's Build a Solid Foundation Client Information:
Weston & Sampson
Reading, MA
PM: Hector Flores
Assigned By: Hector Flores
Collected By: J. Westgate

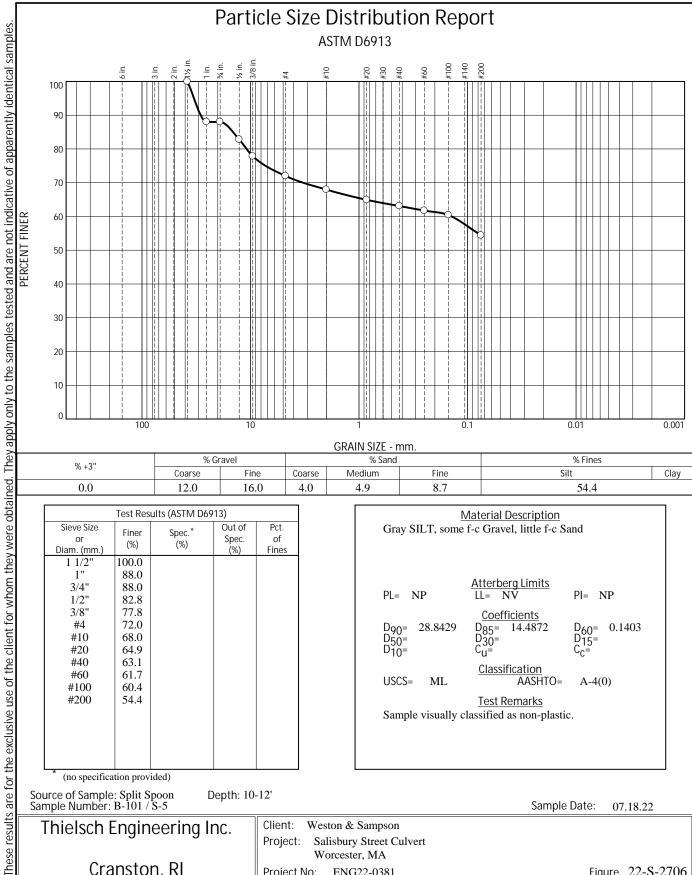
Project Information: Salisbury Street Culvert Worcester, MA

W&S Project Number: ENG22-0381 Summary Page: 1 of 1 Report Date: 07.19.22

#### LABORATORY TESTING DATA SHEET, Report No.: 7422-G-155

								Identif	cation T	ests						Pro	ctor / Ther	mal Resistiv	ity		
Boring No.	Sample No.	Depth (ft)	Laboratory No.	As Received Water Content %	LL %	%	%	Sand %	Fines %	%	Sulfate (mg/kg)	Chloride (mg/kg)	рН	γ <sub>d</sub> MAX (pcf) W <sub>opt</sub> (%)	Yd MAX (pcf) W <sub>opt</sub> (%) (Corr.)	Dry unit wt. (pcf)	Test Water Content %	Target Test Setup as % of Proctor		Thermal Resistivity Oven Dried (°C*cm/W)	Laboratory Log and Soil Description
				D2216	D4	318		D6913		D2974	D4327	D4327	D4972	D	1557				D:	5334	
B-101	S-5	10-12	22-S-2706				28.0	17.6	54.4												Gray SILT, some f-c Gravel, little f-c Sand
B-101	S-6	15-17	22-S-2707				18.1	39.9	42.0												Gray CLAYEY SILT and f-c SAND, little f-c Gravel
B-101	S-7	20-22	22-S-2708				18.5	39.2	42.3												Gray SILT and f-c SAND, little fine Gravel
B-102	S-4	10-12	22-S-2709				5.4	17.0	77.6												Gray SILT, little f-m Sand, trace fine Gravel
B-102	S-5	15-17	22-S-2710				15.5	39.7	44.8												Gray SILT and f-m SAND, little fine Gravel
B-102	S-6	20-22	22-S-2711				11.8	29.0	59.2												Gray SILT, some f-c Sand, little f-c Gravel

Date Received:	07.13.22	Reviewed By:	Date Reviewed:	07.20.22



	Test Res	ults (ASTM D69	13)					
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines				
1 1/2"	100.0							
1"	88.0							
3/4"	88.0							
1/2"	82.8							
3/8"	77.8							
#4	72.0							
#10	68.0							
#20	64.9							
#40	63.1							
#60	61.7							
#100	60.4							
#200	54.4							
* (no specification provided)								

Material Description Gray SILT, some f-c Gravel, little f-c Sand								
PL= NP	Atterberg Limits LL= NV	PI= NP						
D <sub>90</sub> = 28.8429 D <sub>50</sub> = D <sub>10</sub> =	Coefficients D <sub>85</sub> = 14.4872 D <sub>30</sub> = C <sub>U</sub> =	D <sub>60</sub> = 0.1403 D <sub>15</sub> = C <sub>c</sub> =						
USCS= ML	Classification AASHTO=	A-4(0)						
<u>Test Remarks</u> Sample visually classified as non-plastic.								

Sample Date:

Thielsch Engineering Inc.

Source of Sample: Split Spoon Sample Number: B-101 / S-5

Client: Weston & Sampson Project: Salisbury Street Culvert

Worcester, MA

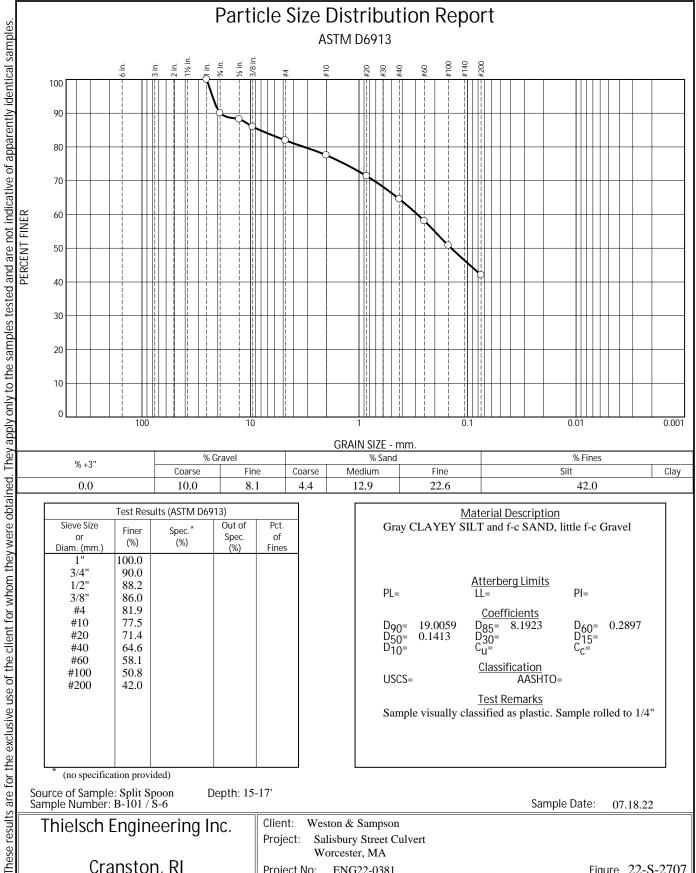
Cranston, RI

Project No: ENG22-0381 Figure 22-S-2706

07.18.22

Checked By: Tested By: JB

Depth: 10-12'



	Test Results (ASTM D6913)									
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines						
1"	100.0									
3/4"	90.0									
1/2"	88.2									
3/8"	86.0									
#4	81.9									
#10	77.5									
#20	71.4									
#40	64.6									
#60	58.1									
#100	50.8									
#200	42.0									

**Material Description** Gray CLAYEY SILT and f-c SAND, little f-c Gravel

**Atterberg Limits** PL= PI= Coefficients D<sub>90</sub>= 19.0059 D<sub>85</sub>= 8.1923

0.2897 D<sub>50</sub>= D<sub>10</sub>=

Classification USCS= AASHTO=

**Test Remarks** Sample visually classified as plastic. Sample rolled to 1/4"

(no specification provided)

Source of Sample: Split Spoon Sample Number: B-101 / S-6

Depth: 15-17'

Sample Date: 07.18.22

Thielsch Engineering Inc.

Client: Weston & Sampson

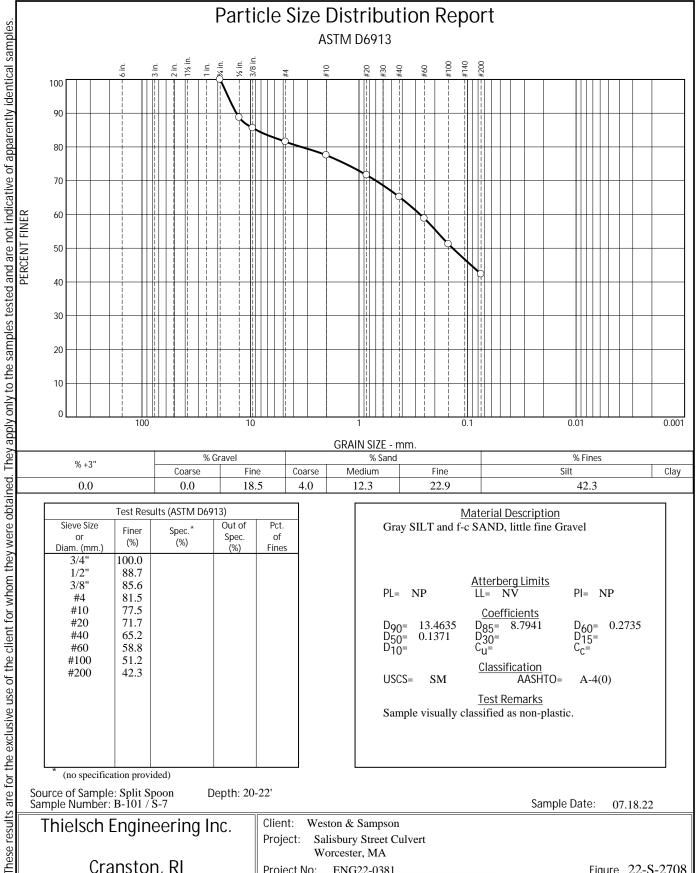
Project: Salisbury Street Culvert

Worcester, MA

Cranston, RI ENG22-0381 Project No:

Figure 22-S-2707

Tested By: JB



Test Results (ASTM D6913)						
Sieve Size Finer Spec.* Out of						
or	(%)	(%)	Spec.	of		
Diam. (mm.)	(70)	(70)	(%)	Fines		
3/4"	100.0					
1/2"	88.7					
3/8"	85.6					
#4	81.5					
#10	77.5					
#20	71.7					
#40	65.2					
#60	58.8					
#100	51.2					
#200	42.3					
*						

**Material Description** Gray SILT and f-c SAND, little fine Gravel

 $\frac{\text{Atterberg Limits}}{\text{LL=} \ \ NV}$ NP PI= NP Coefficients D<sub>90</sub>= D<sub>50</sub>= D<sub>10</sub>= 13.4635 0.2735 D<sub>85</sub>= 8.7941 Classification

USCS= AASHTO= A-4(0)

**Test Remarks** Sample visually classified as non-plastic.

(no specification provided)

Source of Sample: Split Spoon Sample Number: B-101 / S-7

Depth: 20-22'

Sample Date: 07.18.22

Thielsch Engineering Inc.

Client: Weston & Sampson

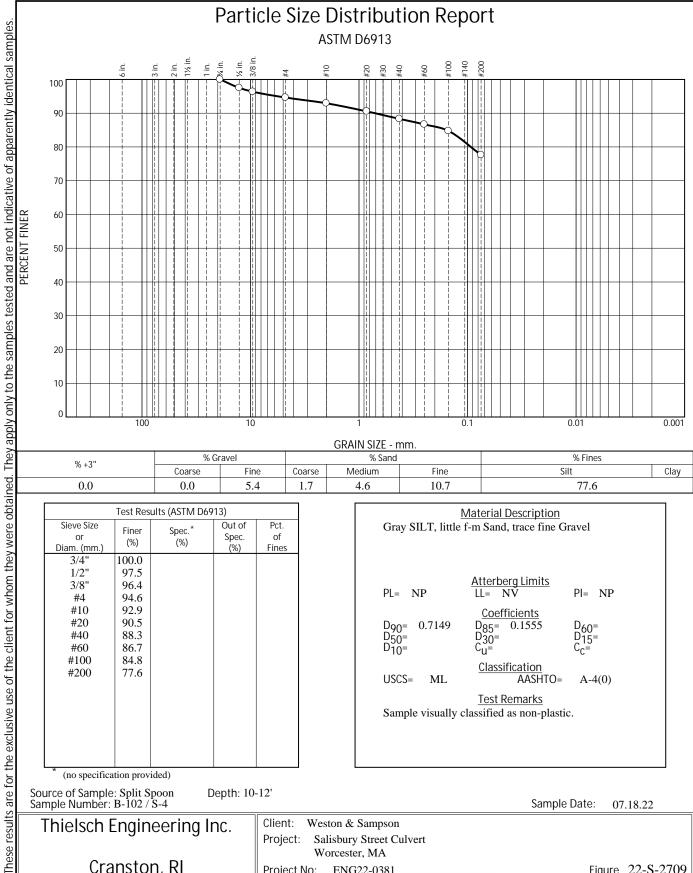
Project: Salisbury Street Culvert

Worcester, MA

Cranston, RI ENG22-0381 Project No:

Figure 22-S-2708

Tested By: JB



Test Results (ASTM D6913)					
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines	
3/4"	100.0				
1/2"	97.5				
3/8"	96.4				
#4	94.6				
#10	92.9				
#20	90.5				
#40	88.3				
#60	86.7				
#100	84.8				
#200	77.6				

**Material Description** Gray SILT, little f-m Sand, trace fine Gravel

 $\frac{\text{Atterberg Limits}}{\text{LL=} \ \ NV}$ NP PI= NP Coefficients D<sub>90</sub>= D<sub>50</sub>= D<sub>10</sub>= 0.7149 D<sub>85</sub>= 0.1555

Classification USCS= MLAASHTO= A-4(0)

**Test Remarks** Sample visually classified as non-plastic.

(no specification provided)

Source of Sample: Split Spoon Sample Number: B-102 / S-4

Depth: 10-12'

Sample Date: 07.18.22

Thielsch Engineering Inc.

Cranston, RI

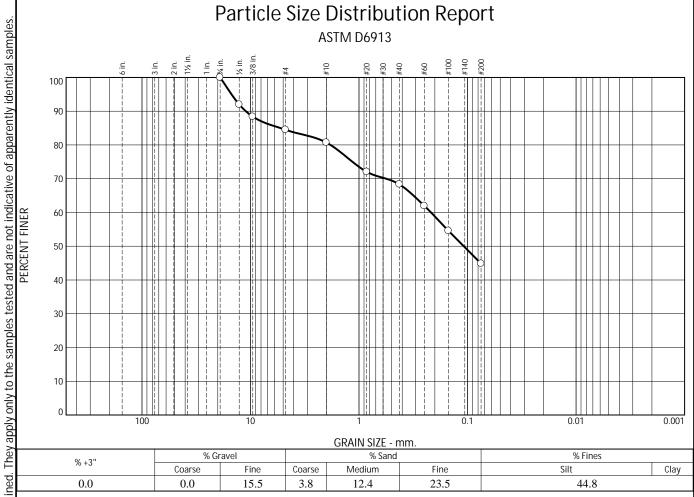
Client: Weston & Sampson

Project: Salisbury Street Culvert

Worcester, MA

Project No: ENG22-0381 Figure 22-S-2709

Tested By: JB



Test Results (ASTM D6913)					
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines	
3/4" 1/2" 3/8" #4 #10 #20 #40 #60 #100 #200	100.0 92.0 88.4 84.5 80.7 72.0 68.3 62.0 54.6 44.8				

**Material Description** Gray SILT and f-m SAND, little fine Gravel

**Atterberg Limits** NP LL= NV PI= NP Coefficients D<sub>90</sub>= D<sub>50</sub>= D<sub>10</sub>= 11.0587 0.2169 D<sub>85</sub>= 5.2848 Classification USCS= AASHTO= A-4(0)

Sample Date:

**Test Remarks** 

Sample visually classified as non-plastic.

(no specification provided)

Thielsch Engineering Inc.

Source of Sample: Split Spoon Sample Number: B-102 / S-5

Depth: 15-17'

Client: Weston & Sampson

Project: Salisbury Street Culvert

Worcester, MA

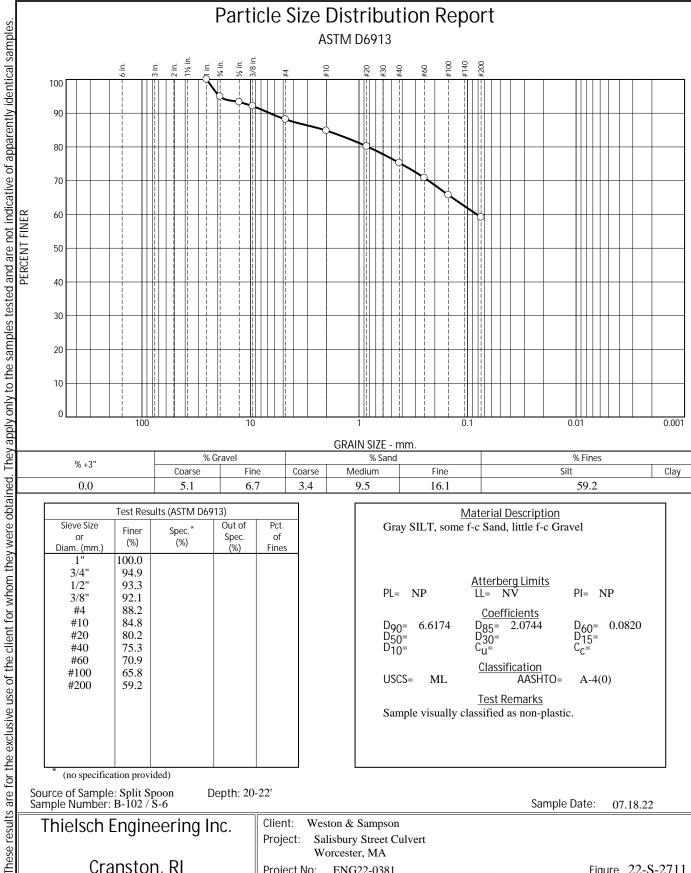
Cranston, RI ENG22-0381 Project No:

Figure 22-S-2710

07.18.22

Checked By: Tested By: JB

These results are for the exclusive use of the client for whom they were obtained.



	Test Results (ASTM D6913)				
Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines	
3/4" 1/2" 3/8" #4 #10 #20 #40 #60 #100 #200	100.0 94.9 93.3 92.1 88.2 84.8 80.2 75.3 70.9 65.8 59.2		(20)	THES	

Material Description
Gray SILT, some f-c Sand, little f-c Gravel

 $\frac{\text{Atterberg Limits}}{\text{LL=} \ \ NV}$ PI= NP NP Coefficients D<sub>90</sub>= D<sub>50</sub>= D<sub>10</sub>= 6.6174 0.0820 D<sub>85</sub>= 2.0744 Classification USCS= MLAASHTO= A-4(0)**Test Remarks** 

Sample visually classified as non-plastic.

(no specification provided)

Source of Sample: Split Spoon Sample Number: B-102 / S-6

Depth: 20-22'

Sample Date:

Thielsch Engineering Inc.

Client: Weston & Sampson Project: Salisbury Street Culvert

Worcester, MA

Cranston, RI

ENG22-0381 Project No:

Figure 22-S-2711

07.18.22

Tested By: JB

#### APPENDIX D

Important Information about This Geotechnical-Engineering Report

# **Important Information about This**

# Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you - assumedly a client representative - interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

#### Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

# Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will <u>not</u> likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do <u>not</u> rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it;
   e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

#### Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do <u>not</u> rely on an executive summary. Do <u>not</u> read selective elements only. *Read and refer to the report in full.* 

### You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- · the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- · the composition of the design team; or
- · project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept* 

responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

### Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

### This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are <u>not</u> final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.* 

#### **This Report Could Be Misinterpreted**

Other design professionals' misinterpretation of geotechnicalengineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- · confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals' plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

#### **Give Constructors a Complete Report and Guidance**

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note* 

conspicuously that you've included the material for information purposes only. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, only from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and be sure to allow enough time to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

#### **Read Responsibility Provisions Closely**

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely*. Ask questions. Your geotechnical engineer should respond fully and frankly.

#### **Geoenvironmental Concerns Are Not Covered**

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures*. If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

### Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. Geotechnical engineers are not building-envelope or mold specialists.



Telephone: 301/565-2733

e-mail: info@geoprofessional.org www.geoprofessional.org

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#### **SECTION 00890**

#### **PERMITS**

#### PART 1 – GENERAL

#### 1.01 DESCRIPTION:

This Section provides specific information and defines specific requirements of the Contractor regarding the preparation and acquisition of permits required to perform the work of this project.

#### 1.02 RELATED WORK:

- A. Section 01014, SCOPE AND SEQUENCE OF WORK
- B. Section 01562, DUST CONTROL
- C. Section 01570, ENVIRONMENTAL PROTECTION
- D. Section 01575, HANDLING EXISTING FLOWS
- E. Section 01740, CLEANING UP

#### 1.03 GENERAL REQUIREMENTS:

A. The Owner has obtained or will obtain and pay for the permits listed below, which are required for this project. The Contractor shall assist in obtaining certain permits, as indicated. The Contractor shall obtain and pay for all other permits required, as defined under the <u>Permits</u> subsection of SPECIAL PROVISIONS.

Permits by Owner	Status
Conservation Commission Order of Conditions (Ch. 131, s. 40)	(Attached)
Trench Permit (520 CMR 14.00)(eff. date 3/1/09)	*
U.S. Corps of Engineers 404 Permit	
Mass. DEP Chapter 91 Waterways License (310 CMR 9.00)	
*Contractor shall prepare permit application and obtain the permit after contract is awarded, bearing all expenses. Owner will pay for and/or	

06/15/2022 00890-1

#### 1.04 CONSERVATION COMMISSION ORDERS:

The Conservation Commission has under the authority of Massachusetts General Laws Chapter 131, Section 40, issued an Order of Conditions on the work under this contract. This Order is to become a part of the Contract Documents and the Contractor shall perform all work in strict conformance with said Order. A copy of this Order is attached to this section.

#### PART 2 - PRODUCTS

Not Used.

#### PART 3 – EXECUTION

#### 3.01 PERFORM WORK IN ACCORDANCE WITH REQUIREMENTS:

- A. The Contractor shall perform the work in accordance with the Contract Documents, including the attached permits/order of conditions, and any applicable municipal requirements.
- B. Prior to commencing any construction activities, the Contractor shall demonstrate to the Owner and the Engineer, through on-site inspection and submitting copies of permits or approvals, that it is in full compliance with the terms and conditions of all permits specified herein. The Contractor shall maintain full compliance with all permits throughout the performance of the work, and upon request, grant access to permitting authorities to inspect the site for the purpose of verifying such compliance.

**END OF SECTION** 

06/15/2022 00890-2



### WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:	:
349-1385	
MassDFP File #	

eDEP Transaction #

Worcester City/Town

#### A. General Information

Please note: this form has been modified with added space to accommodate the Registry of Deeds Requirements

1. From:	City of Worcester
i. Fiolii.	Conservation Commission

2. This issuance is for (check one):

a. 

Order of Conditions

b. Amended Order of Conditions

3. To: Applicant:

Important: When filling out forms on the computer, use only the tab key to move your





a. First Name	b. Last Name	
City of Worcester Department of Pul	olic Works & Parks	
c. Organization		
20 East Worcester Street		
d. Mailing Address		
Worcester	MA	01604
e. City/Town	f. State	g. Zip Code

4. Property Owner (if different from applicant):

a. First Name b. Last Name

Worcester Jewish Federation; Jewish Healthcare Center, Inc.; James P. Vander Salm

c. Organization

633 Salisbury Street; 629 Salisbury Street; 655 Salisbury Street

d. Mailing Address

Worcester 01609 MA e. City/Town f. State g. Zip Code

5. Project Location:

Salisbury St. ROW and 633, 646, & 655 Salisbury Street Worcester a. Street Address b. City/Town 50-018; 50-005; 50-022 -00006; -00006; -00001 d. Parcel/Lot Number c. Assessors Map/Plat Number

Latitude and Longitude, if known: 42.29637 -71.83783 d. Latitude e. Longitude

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### **WPA Form 5 – Order of Conditions**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP: 349-1385
MassDEP File #
eDEP Transaction #
Worcester
City/Town

#### A. General Information (cont.)

<i>,</i>	Ochicia	i iiiioi iiiatioi	• (00111.)				
6.	Property re one parcel) Worcester	•	istry of Dee	ds for (attach addition	al inf	formation if more than	
	a. County			b. Certificate Num	ber (if	registered land)	
	4081; 5881	4: 64767		482; 168; 328	`	,	
	c. Book	1, 01101		d. Page			
		11/29/2023		1/29/2024		2/15/2024	
7.	LIGITAC:	a. Date Notice of Inten	t Filed	b. Date Public Hearing Cl	nsed		
<ul> <li>a. Date Notice of Intent Filed</li> <li>b. Date Public Hearing Closed</li> <li>Final Approved Plans and Other Documents (attach additional pla as needed):</li> <li>Department of Public Works and Parks – Salisbury Street Culvert</li> </ul>				plan	or document reference		
	a. Plan Title						
	Weston + S			Scott R. Bruso			
	b. Prepared B	у		c. Signed and Sta	mped	by	
	11/10/2023	}		1"=10'			
	d. Final Revis	ion Date		e. Scale			
	NOI Applica	ation Materials				11/29/2023	
	Stormwater					12/19/2022	
		lan or Document Title				g. Date	
	Finding						
1.	Findings pu	irsuant to the Mas	sachusetts	Wetlands Protection A	Act:		
	provided in the areas in	this application ar	nd presente oposed is si	d at the public hearing gnificant to the following	, this	eased on the information commission finds that terests of the Wetlands	
a.	□ Public      □	Water Supply b.	Land	Containing Shellfish	C.	□ Prevention of Pollution	
d.	□ Private	Water Supply e.	⊠ Fisher	ies	f.	□ Protection of Wildlife Habitat	
g.	⊠ Ground	dwater Supply h.	Storm	Damage Prevention	i.		
2.	This Comm	ission hereby finds	the project,	as proposed, is: (checl	k one	e of the following boxes)	
Apı	<b>proved</b> subj	ect to:					
a.	standards s be perform General Co that the foll	set forth in the wet ed in accordance v onditions, and any owing conditions r	lands regula with the Not other specia nodify or dif	ice of Intent reference	on or d ab to the	rders that all work shall ove, the following is Order. To the extent ations, or other	

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### **WPA Form 5 – Order of Conditions**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
349-1385
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### B. Findings (cont.)

#### Denied because:

ο.	the proposed work cannot be conditioned to meet the performance standards set in the wetland regulations. Therefore, work on this project may not go forward unless until a new Notice of Intent is submitted which provides measures which are adequat protect the interests of the Act, and a final Order of Conditions is issued. A descripti the performance standards which the proposed work cannot meet is attached to Order.	and e to <b>on of</b>
с.	the information submitted by the applicant is not sufficient to describe the site, the 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 Intent is submitted which provides sufficient information and includes measures which adequate to protect the Act's interests, and a final Order of Conditions is issued. A description of the specific information which is lacking and why it is necessary attached to this Order as per 310 CMR 10.05(6)(c).	of h are
3.	☐ Buffer Zone Impacts: Shortest distance between limit of project disturbance and the wetland resource area specified in 310 CMR 10.02(1)(a) a. lin	near feet

Inland Resource Area Impacts: Check all that apply below. (For Approvals Only)

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. 🛭 Bank	a. linear feet	b. linear feet	c. linear feet	d. linear feet
5. Bordering Vegetated Wetland	a. square feet	b. square feet	c. square feet	d. square feet
6. 🛛 Land Under	240	240	320	320
Waterbodies and Waterways	a. square feet 48.5	b. square feet 48.5	c. square feet	d. square feet
Waterwaye	e. c/y dredged	f. c/y dredged		
<ol> <li>Bordering Land Subject to Flooding</li> </ol>	a. square feet	b. square feet	c. square feet	d. square feet
Cubic Feet Flood Storage	e. cubic feet	f. cubic feet	g. cubic feet	h. cubic feet
<ol> <li>Isolated Land Subject to Flooding</li> </ol>	a. square feet	b. square feet		
Cubic Feet Flood Storage	c. cubic feet	d. cubic feet	e. cubic feet	f. cubic feet
9. Riverfront Area (25' - Worcester)	a. total sq. feet	b. total sq. feet		
Sq ft within 25 ft	c. square feet	d. square feet	e. square feet	f. square feet

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### **WPA Form 5 – Order of Conditions**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:
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Worcester

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### B. Findings (cont.)

Coastal Resource Area Impacts: Check all that apply below. (For Approvals Only)

		Proposed Alteration	Permitted Alteration F	Proposed Replacement	Permitted Replacement
10.	Designated Port  Areas	Indicate size un	der Land Under	the Ocean, belov	N
11.	Land Under the Ocean	a. square feet	b. square feet		
12.	Barrier Beaches	c. c/y dredged Indicate size un below	d. c/y dredged der Coastal Bea	ches and/or Coa	stal Dunes
13.	Coastal Beaches	a. square feet	b. square feet	cu yd	cu yd d. nourishment
14.	Coastal Dunes	a. square feet	b. square feet	cu yd c. nourishment	d. nourishment
15.   16.	Coastal Banks Rocky Intertidal Shores	a. linear feet a. square feet	b. linear feet b. square feet		
17.   18.	☐ Salt Marshes ☐ Land Under Salt Ponds	a. square feet a. square feet	b. square feet b. square feet	c. square feet	d. square feet
19.	☐ Land Containing Shellfish	c. c/y dredged a. square feet	d. c/y dredged b. square feet	c. square feet	d. square feet
20.	☐ Fish Runs	Indicate size under Coastal Banks, Inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above			
	☐ Land Subject to Coastal Storm Flowage	a. c/y dredged a. square feet	b. c/y dredged b. square feet		
22.	Riverfront Area	a. total sq. feet	b. total sq. feet		
	Sq ft within 100 ft	c. square feet	d. square feet	e. square feet	f. square feet
	Sq ft between 100- 200 ft	g. square feet	h. square feet	i. square feet	j. square feet

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#### B. Findings (cont.)

* #23. 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
(BVW) or
B.17.c (Salt
Marsh) above,
please enter
the additional

23.	Restoration/Enhancement *:	
	a. square feet of BVW	b. square feet of salt marsh
24.	☐ Stream Crossing(s):	
	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.
- amount here. 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.
    - c. If the work is for a Test Project, this Order of Conditions shall be valid for no more than one year.
  - 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. An Order of Conditions for a Test Project may be extended for one additional year only upon written application by the applicant, subject to the provisions of 310 CMR 10.05(11)(f).
  - 6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not extend the issuance date of the original Final Order of Conditions and the Order will expire on \_\_\_\_\_ unless extended in writing by the Department.
  - 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.

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#### **WPA Form 5 – Order of Conditions**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

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#### C. General Conditions Under Massachusetts Wetlands Protection Act

- 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 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	349-1385	"	

- 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 MassDEP.
- 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.

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#### WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

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#### C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

- 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 it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.

	If the v	vork is subject to the Stormwater Standards, then the project is subject to
	=	is NOT subject to the Massachusetts Stormwater Standards
	(1) 🔯	is subject to the Massachusetts Stormwater Standards (as a Redevelopment)
19.	The wo	ork associated with this Order (the "Project")

### If the work is subject to the 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 Pollution Discharge Elimination System Construction General Permit as required by Stormwater Condition 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 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;

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#### WPA Form 5 - Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP: 349-1385

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City/Town

#### C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

*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 18(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 Pollution 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 18(f) through 18(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 18(f) through 18(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.

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#### **WPA Form 5 – Order of Conditions**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

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#### C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

- 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 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.
- I) 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 (if you need more space for additional conditions, please attach a text document):

#### See Attachment A.

20. For Test Projects subject to 310 CMR 10.05(11), the applicant shall also implement the monitoring plan and the restoration plan submitted with the Notice of Intent. If the conservation commission or Department determines that the Test Project threatens the public health, safety or the environment, the applicant shall implement the removal plan submitted with the Notice of Intent or modify the project as directed by the conservation commission or the Department.

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1. 2.

3.

**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

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### D. Findings Under Municipal Wetlands Bylaw or Ordinance

Is a municipal wetlands bylaw or ordinance applicable?   Yes  No	)		
The City of Worcester hereby finds (check one Conservation Commission	that applies):		
a.	set forth in a		
City of Worcester Wetlands Protection Ordinance & Regulations  1. Municipal Ordinance or Bylaw	COW GRO Part 1. Ch. 6.		
	2. Citation		
Therefore, work on this project may not go forward unless and until a relative Intent is submitted which provides measures which are adequate to meastandards, and a final Order of Conditions is issued.			
b.	a municipal		
City of Worcester Wetlands Protection Ordinance & Regulations  1. Municipal Ordinance or Bylaw	COW GRO Part 1. Ch. 6.		
	2. Citation		
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 follow more space for additional conditions, attach a text document):	s (if you need		
See Attachment A.			

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#### **ATTACHMENT A**

# Worcester Conservation Commission Special Order of Conditions

City of Worcester Wetlands Protection Ordinance & City of Worcester Wetlands Protection Regulations (City of Worcester Revised Ordinance Part I, Chapter 6)

And

Massachusetts General Laws, Chapter 131, §40 - Massachusetts Wetlands Protection Act

### Salisbury Street Right-of-Way and 633, 646, & 655 Salisbury Street (CC-2023-081 & DEP#349-1385)

**Project Description:** To replace an existing culvert, reconstruct and pave a portion of the roadway, and conduct related site work.

**Findings/Waivers:** The work is approved as a limited project pursuant to 310 CMR 10.53(3)(k) and is therefore exempt from the buffer zone performance standards outlined in

Section 4.2.4 of the Worcester Wetlands Protection Regulations.

#### **Table of Contents:**

l.	Conditions to Meet Prior to and During Construction	. 2
II.	Conditions to Meet Before the Start of Any Activity	. 2
	Conditions to Meet During Construction	
IV.	Conditions to Meet at Completion of Project	. 4
V.	General Conditions	. 5

#### Notes:

- Office of the Commission is located at the Division of Planning and Regulatory Services (455 Main Street 4<sup>th</sup> floor, Worcester, MA), which can be contacted by e-mailing planning@worcesterma.gov or calling 508-799-1400 ext. 31440.
- Asterisked (\*) conditions are standard conditions of approval for all projects.

#### I. Conditions to Meet Prior to and During Construction

- 21. <u>Person Responsible for Compliance with the Order of Conditions</u>\* A person shall be designated to be responsible to monitor compliance with the Order of Conditions. Their name and contact information (24/7) shall be provided to the Office of the Commission prior to start of any activity. This person shall conduct:
  - a) periodic inspections to assure the adequacy and continued effectiveness of erosion and sediment controls:
  - b) inspections of said controls following 0.5-inch or greater rain events, or after a heavy snow melt.
- 22. <u>Contract</u>\* This Order of Conditions and all approved plans shall be included as part of any contract and subcontract and shall be posted in a prominently displayed location in the supervisory office on site during all phases of construction.
- 23. Notification\* The applicant shall notify the Office of the Commission a minimum of 48 hours prior to the start of any activity.
- 24. Wetland Flagging Prior to construction, wetland flags shall be installed along the wetland boundary and shall remain in place during and after construction until approved for removal through the issuance of Certificate of Compliance for the entire project.

#### II. Conditions to Meet Before the Start of Any Activity

- 25. Pre-Construction Conference\*
  - a) The Conservation Commission or its Agents shall conduct a pre-construction conference prior to commencement of activities in each phase of the project. Phasing, if any, shall conform to the approved plans.
  - b) The property owner / applicant and any person performing work that is subject to this Order are responsible for understanding and complying with the requirements of this Order, the Wetlands Protection Act, 310 CMR 10.00 and City of Worcester Wetlands Protection Ordinance and Regulations. Said persons shall acknowledge such in writing prior to commencement of activities.
- 26. <u>Inspections Prior to Site Preparation and Site Work</u>\* Erosion and sediment controls shall be installed and verified, in compliance with final approved plans, by the Commission or its Agents prior to the commencement of any excavation, grubbing and/or stumping of vegetation, grading, construction, or other site preparation.
- 27. <u>Construction Schedule</u>\* Submit a Construction Schedule consistent with Work Sequencing plans provided to the Office of the Commission prior to the start of any activities.

#### III. Conditions to Meet During Construction

- 28. Culvert Replacement All culverts for stream crossings shall adhere to the following:
  - a) Activities to install the crossing shall take place during a period of dry weather when no precipitation is forecasted within 48 hours.
  - b) The Commission and or its Agent shall perform an inspection of the erosion controls and conditions on site prior to the commencement of work on this subphase.
  - c) The applicant and/or contractor shall provide the Office of the Commission with at least 48 hours prior to commencement of work.
  - d) A Professional Wetland Scientist (PWS) shall oversee activities related to crossing construction and shall be on site during such time to ensure no inadvertent impacts occur to the resource

area. Such professional shall document this work and provide a report to the Office of the Commission within 1 week of completion of the installation, documenting:

- i. Photos of the site, before, during, and after work is completed;
- ii. Whether any impacts occurred to resource areas and how they were remedied;
- iii. How the area was stabilized; iv. Any deviations that exist between the conditions and the approved plans.
- e) The applicant shall provide to the Office of the Commission an appropriately signed and stamped as-built of all crossing areas prepared by a Massachusetts licensed registered Professional Engineer within 30 days of completion of crossings demonstrating compliance with this condition.
- 29. <u>Limit of Work\*</u> No removal, filling, dredging or altering of jurisdictional areas shall take place outside the approved work under this Order of Condition.
- 30. Work Sequencing\* Activities shall take place in accordance with all phasing and sequencing shown on the plan and/or provided in the application materials on file with the Office of the Commission and shall follow any lot opening restrictions otherwise provided herein.

#### 31. Erosion Stabilization -

- a) <u>Erosion and Sediment Controls</u>\* All erosion and sediment controls shall be monitored, maintained, and adjusted for the duration of the project to prevent adverse impacts to jurisdictional areas. Additional erosion and sediment controls may be utilized on site as needed.
- b) <u>Off Site Impacts</u>\* There shall be no off-site erosion, flooding, ponding, or flood-related damage from runoff caused by the project activities.
- c) <u>Unanticipated Drainage or Erosion</u>\* The applicant shall control any unanticipated drainage and/or erosion conditions that may cause damage to jurisdictional areas and/or abutting or downstream properties. Said control measures shall be implemented immediately upon need. The Office of the Conservation Commission shall be notified if such conditions arise and of the measures utilized.
- d) <u>Soil Stabilization due to Delay in Work</u>\* If there is an interruption of more than 10, but less than 60 days between completion of grading and revegetation, the applicant shall sow all disturbed areas with annual rye grass to prevent erosion. If soils are to be exposed for longer than 60 days, a temporary cover of rye or other grass should be established following US Soil Conservation Services procedures, as recently amended, to prevent erosion and sedimentation. Once final grading is complete, loaming and seeding of final cover should be completed promptly.

#### e) Grading of Slopes \*-

- i. <a href="#">>40% Slope</a> Slopes shall not exceed those specified in the plans approved by the Conservation Commission. Any slope equal to or greater than 40% (1 vertical to 2 1/2 horizontal) shall be stabilized with erosion control matting.
- ii. <a href="eq:40% Slope"><40% Slope</a> Final grades of vegetated areas shall not exceed a slope of 1 vertical to 2 1/2 horizontal (40%) and shall be stabilized to prevent erosion, particularly during the construction period.
- f) <u>Stockpile Maintenance</u>\* Any stockpiling of loose materials shall be properly stabilized to prevent erosion into and sedimentation of jurisdictional areas. Preventative controls such as strawbales or erosion control matting shall be implemented to prevent such an occurrence.
- g) <u>Stockpile Location</u> In no case shall any soil or excavated material be stockpiled within 50 feet of any wetland, floodplain, or storm drain inlet.

h) <u>Site Stabilization Prior to Winter\*</u> - Prior to winter, exposed soils shall be stabilized (e.g. with demonstrated vegetative growth, impermeable barriers, erosion control blankets, etc.).

#### 32. Invasive Insects\* -

- a) Plantings No trees to be planted shall be species susceptible to the Asian Longhorned Beetle or Emerald Ash Borer.
- b) Wood Removal All tree, brush & wood removal shall adhere to the most recently amended requirements set forth by the Massachusetts Department of Conservation & Recreation for any project located in the Asian Longhorned Beetle Quarantine Zone.
- 33. Dewatering\* If dewatering is required,
  - a) Notice of such activities shall be given to the Office of the Commission within 24 hours of commencement:
  - b) There shall be no discharge of untreated dewatered stormwater or groundwater to jurisdictional areas either by direct or indirect discharge to existing drainage systems;
  - c) Any discharge to surface waters or drainage structures must be visibly free of sediment;
  - d) To the maximum extent practicable, proposed dewatering activities should be located outside of the 100' buffer. If such activities must be located within the 100' buffer, they shall be monitored at all times when the pumps are running;
  - e) Dewatering activities shall be confined within an area of secondary containment at all times.
- 34. <u>Turbidity Monitoring Construction Reports</u> Written construction reports, prepared by a competent individual specializing in erosion and sediment controls independent of the project contractor (e.g. professional engineer, professional wetland scientist, etc.), shall be submitted to the Commission during all earthwork and drainage construction.
  - a) The first report shall be submitted to the Conservation Commission prior to commencement of construction activities and shall include base line measurements at the locations selected for turbidity monitoring during low flow conditions and during a rain event of 0.5 inches or greater.
  - b) Consequent reports shall be submitted monthly or after each rain event of 0.5 inches or greater, whichever is more frequent, and shall include:
    - i. turbidity measurements at the same locations as specified above, taken during each such rain event, and comparisons to the base line measurements;
    - ii. an evaluation, during such events, of all existing erosion and sedimentation controls, as well as stormwater management system/s performance; and
    - iii. solutions employed and/or recommendations to fix areas found to be deficient, if any.

#### 35. Spill Prevention\* -

- a) No fuel, oil, or other pollutants shall be stored in any resource area or the buffer zone thereto, unless specified in this Order;
- b) No refueling shall take place within resource areas or 100-ft to a resource area;
- c) The applicant shall take all necessary precautions to prevent discharge or spillage of fuel, oil or other pollutants onto any part of the site;
- d) A spill kit shall be present on site at all times.

#### IV. Conditions to Meet at Completion of Project

36. <u>Site Stabilization\*</u> - All disturbed areas shall be properly stabilized with well-established perennial vegetation or other approved methods before the project is considered complete.

- 37. <u>Erosion and Sediment Controls\*</u> Erosion and sediment controls shall not be removed from the site until all disturbed areas have been stabilized with final vegetative cover and approval has been received from the Commission or its Agents to do so. The controls must then be removed within two weeks of receipt of that certification.
- 38. Certificate of Compliance\* Upon completion of the project, the applicant shall request in writing a Certificate of Compliance from the Commission. If the project has been completed in accordance with plans stamped by a registered professional engineer, architect, landscape architect, or land surveyor, certification must include a written statement by such professional certifying the same.
  - a) A certified as-built plan-of-land shall be provided showing final grades, resource areas, and all constructed improvements; the plan shall include a to-scale profile view of the installed culvert.

#### V. General Conditions

- 39. <u>Change in Ownership</u>\* If a change in ownership takes place while this Order is still in effect, it is the responsibility of the new owner to notify the Commission of the change and to provide the name of the person responsible for compliance with the Order.
- 40. <u>Conservation Agent's Power to Act</u>\* With respect to all conditions, except \_\_\_\_\_, the Conservation Commission designates the Conservation Agent, as its Agent with full powers to act on its behalf in administering and enforcing this Order, unless the Agent determines approval from the Commission is appropriate.
- 41. <u>Right to Inspect\*</u> A member of the Conservation Commission or its Agent may enter and inspect the property and the activity that are the subjects of this Order at all reasonable times, with or without probable cause or prior notice, and until a Certificate of Compliance is issued, for the purpose of evaluating compliance with this Order (and other applicable laws and regulations).
- 42. Changes to the Plan or Errors & Omissions\* -
  - (a) If any plan, calculation, or other data presented to the Office of the Commission is in error or have omissions, and are deemed significant by the Commissioners or their Agents, all work will stop at the discretion of the Commission, until the discrepancies have been rectified to the Commission's satisfaction.
  - (b) The applicant must notify the Commission in writing of any changes in the plans or implementation of the proposed activity where mandated by any local, state, or federal agencies having jurisdiction over the proposed activity. If, in the opinion of the Commission, any changes in the plans or implementation of the proposed activity so require, then the Commission may modify, amend or rescind this Order in a way consistent with:
    - M.G.L. Chapter 131, Section 40,
    - 310 CMR 10.00, Wetlands Protection,
    - the City of Worcester's Wetlands Protection Ordinance, and
    - the Commission's Wetlands Protection Regulations

If any provisions of any conditions, or application thereof is held to be invalid, such invalidity shall not affect any other provisions of this Order. If the Commission deems that a proposed change is major or substantial, a new hearing may be required.

43. <u>Liability</u>\* - The applicant shall indemnify and save harmless the Commonwealth, the City of Worcester, the Conservation Commission, and its Agents against all sites, claims or liabilities of every name and nature arising at any time out of or in consequence of the acts of the Commission or its Agents in the performance of the work covered by this Order and/or failure to comply with the terms and conditions or this Order whether by itself or its employees or subcontractors.



#### **WPA Form 5 – Order of Conditions**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP: 349-1385

MassDEP File #

eDEP Transaction #
Worcester
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.

Please indicate the number of members who will sign this form.

This Order must be signed by a majority of the Conservation Commission.

2/15/2024

1. Date of Issuance
4 of 6

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.

The names typed below represent the intent to sign the foregoing document in accordance with MGL Chapter 110G §9

Duly authorized by Ch.110G and recorded at Worcester Registry of Deeds in Book 62537 Page 329.

	Devin Canton
Signature Docusigned by:	Printed Name
	Joseph Charpentier
Signature F683C367C17D 9E. Stuart kinsuru	Printed Name
	YSWWY Stuart Kirshner
Signature 71E1FDC8AF4	E4BF Printed Name
	Timothy Magliaro
Signature Lindsay Mystrom	Printed Name
	<sup>Ustrom</sup> Lindsay Nystrom
Signature DocuSigned by 1EC379ADB20C4D0	C4D0 Printed Name
	Andrew Truman
Signature	Printed Name
Signature	Printed Name
□ by hand delivery on	by certified mail, return receipt requested, on 2/15/2024
Date	Date

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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: 349-1385

MassDEP File #

eDEP Transaction #

Worcester City/Town

### 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.

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Provided by MassDEP:



**Massachusetts Department of Environmental Protection** Bureau of Resource Protection - Wetlands

349-1385 MassDEP File # WPA Form 5 - Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

eDEP Transaction # Worcester City/Town

### **G.** Recording Information

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

Conservation Commission		
Detach on dotted line, have stamped be Commission.	y the Registry of Deeds and su	Ibmit to the Conservation
То:		
Conservation Commission		
Conservation Commission		
Please be advised that the Order of C	Conditions for the Project at:	
Project Location	MassDEP File Num	ber
Has been recorded at the Registry of	Deeds of:	
County	Book	Page
for: Property Owner		
and has been noted in the chain of titl	le of the affected property in:	
Book	Page	
In accordance with the Order of Cond	litions issued on:	
Date		
If recorded land, the instrument numb	er identifying this transaction is	S:
Instrument Number		
If registered land, the document numb	per identifying this transaction i	s:
Document Number		
Signature of Applicant		

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Important:

When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.

# **Massachusetts Department of Environmental Protection**

Bureau of Resource Protection - Wetlands

### **Request for Departmental Action Fee Transmittal Form**

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by DEP	

DEP File Number:

### A. Request Information

1.	Location of Project		
	a. Street Address	b. City/Town, Zip	
	c. Check number	d. Fee amount	
2.	Person or party making request (if appropriate, na	me the citizen group's represe	entative):
	Name		
	Mailing Address		
	City/Town	State	Zip Code
	Phone Number	Fax Number (if ap	plicable)
3.	Applicant (as shown on Determination of Applicable (Form 4B), Order of Conditions (Form 5), Restora Non-Significance (Form 6)):		
	Name		
	Mailing Address		
	City/Town	State	Zip Code
	Phone Number	Fax Number (if ap	plicable)
4.	DEP File Number:		

### **B.** Instructions

1. When the Departmental action request is for (check one): ☐ Superseding Order of Conditions – Fee: \$120.00 (single family house projects) or \$245 (all other projects) ☐ Superseding Determination of Applicability – Fee: \$120

☐ Superseding Order of Resource Area Delineation – Fee: \$120

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# **Massachusetts Department of Environmental Protection**Bureau of Resource Protection - Wetlands

DEP File Number:

# Request for Departmental Action Fee Transmittal Form

Provided by DEP

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

B. Instructions (cont.)

Send this form and check or money order, payable to the Commonwealth of Massachusetts, to:

Department of Environmental Protection Box 4062 Boston, MA 02211

- 2. On a separate sheet attached to this form, state clearly and concisely the objections to the Determination or Order which is being appealed. To the extent that the Determination or Order is based on a municipal bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.
- 3. Send a **copy** of this form and a **copy** of the check or money order with the Request for a Superseding Determination or Order by certified mail or hand delivery to the appropriate DEP Regional Office (see <a href="https://www.mass.gov/service-details/massdep-regional-offices-by-community">https://www.mass.gov/service-details/massdep-regional-offices-by-community</a>).
- 4. 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.

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### **DEPARTMENT OF THE ARMY**

US ARMY CORPS OF ENGINEERS NEW ENGLAND DISTRICT 696 VIRGINIA ROAD CONCORD MA 01742-2751

April 4, 2024

Regulatory Division

File Number: NAE-2024-00219

David Harris
City of Worcester Department of Public Works
20 East Worcester Street
Worcester, Massachusetts 01604
(Via email): harrisd@worcesterma.gov

Dear David Harris:

This regards your application submitted to the U.S. Army Corps of Engineers to permanently impact 355 square feet of stream below the Ordinary High Water (OHW) line for the purposes of permanently impacting 355 square feet for the purposes of replacing a culvert. Associated work will include in-kind replacement of another existing 36-inch storm drain, road repairs, and relocation of utilities. The replaced culvert will be 71 feet long, 5 feet wide (355 square feet) and 6 feet tall with 2 feet buried into the substrate for an opening of 4 feet. The culvert will be 4-sided instead of 3-sided to protect the utilities underneath the stream. Dry conditions for in-stream work will be met by diverting the flow via a 3 feet storm drainpipe. The 355 square feet will also be coffer dammed to provide dry conditions for the construction phase. Sandbags will be installed upstream of the project site to maintain dry conditions. Silt curtains will be installed downstream of the culvert. This project is located in Unnamed tributary between Between 646 Salisbury Street and 655 Salisbury Street, Worcester, Massachusetts 01609 at site coordinates 42.296523, -71.838007. The work is shown on the enclosed plans titled "CITY OF WORCESTER, MASSACHUSETTS DEPARTMENT OF PUBLIC WORKS AND PARKS SALISBURY STREET CULVERT REPLACEMENT" on 17 sheets and dated "11 / 10 / 2023".

Based on the information that you have provided, we verify that the activity is authorized under General Permit # 23 and # 24 of the June 2, 2023, federal permit known as the Massachusetts General Permits (GPs). The GPs are available at <a href="https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit">https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit</a>.

Please review the enclosed GPs carefully, in particular the general conditions beginning on page 35, and ensure that you and all personnel performing work authorized by the GPs are fully aware of and comply with its terms and conditions. A copy of the GPs and this verification letter shall be available at the work site as required by General Condition 17. You must perform this work in compliance with the following special condition(s):

- You must complete and return the enclosed Work Start Notification Form to this
  office at least two weeks before the anticipated start date. The form shall be
  emailed to Maninder Singh at <a href="Maninder.Singh@usace.army.mil">Maninder.Singh@usace.army.mil</a> and <a href="mailed-cenae-r@usace.army.mil">cenae-r@usace.army.mil</a>; or mailed to Maninder Singh, Regulatory Division, U.S. Army
  Corps of Engineers, New England District, 696 Virginia Road, Concord,
  Massachusetts 01742-2751.
- 2) You must complete and return the enclosed Compliance Certification Form to this office within one month of the completion of work. The form shall be emailed to Maninder Singh at <u>Maninder.Singh@usace.army.mil</u> and <u>cenae-r@usace.army.mil</u>; or mailed to Maninder Singh, Regulatory Division, U.S. Army Corps of Engineers, New England District, 696 Virginia Road, Concord, Massachusetts 01742-2751.

This authorization expires on June 1, 2028. You must commence or have under contract to commence the work authorized herein by June 1, 2028, and complete the work by June 1, 2029. If not, you must contact this office to determine the need for further authorization and we recommend you contact us *before* the work authorized herein expires. Please contact us immediately if you change the plans or construction methods for work within our jurisdiction as we must approve any changes before you undertake them. Performing work within our jurisdiction that is not specifically authorized by this determination or failing to comply with the special condition(s) provided above or all the terms and conditions of the GPs may subject you to the enforcement provisions of our regulations.

This authorization does not obviate the need to obtain other federal, state, or local authorizations required by law. Applicants are responsible for applying for and obtaining any other approvals.

We continually strive to improve our customer service. To better serve you, we would appreciate your completing our Customer Service Survey located at <a href="https://regulatory.ops.usace.army.mil/customer-service-survey">https://regulatory.ops.usace.army.mil/customer-service-survey</a>.

Please contact Maninder Singh of my staff at (978) 318-8967 or (978)-257-6884 or Maninder.Singh@usace.army.mil if you have any questions.

Sincerely,

Paul Maniccia Chief, Massachusetts Section Regulatory Division

### **Enclosures**

### Cc:

Megan Kearns, Weston&Sampson, <a href="mailto:kearns.megan@wseinc.com">kearns.megan@wseinc.com</a>
Ed Reiner, U.S. EPA, Region 1, Boston, MA, <a href="mailto:reiner.ed@epa.gov">reiner.ed@epa.gov</a>
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DEP CERO, Wetlands and Waterways, Worcester, MA; <a href="mailto:cero\_noi@mass.gov">cero\_noi@mass.gov</a>
David Cameron@mass.gov

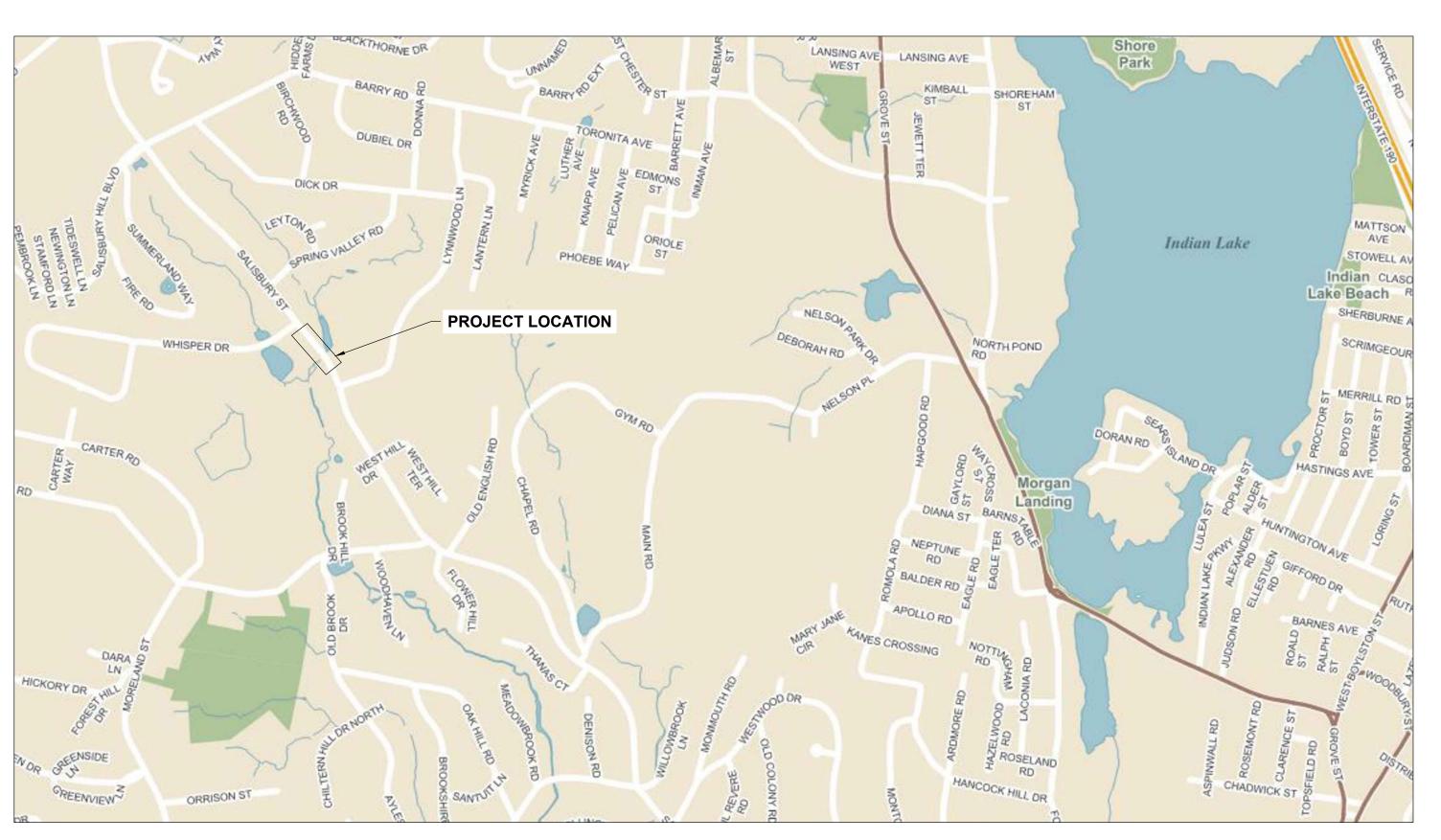
David Robinson, MA Board of Underwater Archaeological Resources (BUAR);

David Robinson, MA Board of Underwater Archaeological Resources (BUAR); david.s.robinson@mass.gov

Worcester Conservation Commission, planning@worcesterma.gov

# CITY OF WORCESTER, MASSACHUSETTS

# DEPARTMENT OF PUBLIC WORKS AND PARKS SALISBURY STREET CULVERT REPLACEMENT



LOCATION MAP



Weston Sampson Engineers, Inc.

Conquitanta

SHEET TITLE

1 COVER SHEET - TITLE SHEET

C-1 GENERAL NOTES & LEGEND

C-2 EXISTING CONDITIONS PLAN

C-3 ROADWAY CONSTRUCTION PLAN

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C-5 CONSTRUCTION DETAILS 2

C-6 TEMPORARY TRAFFIC CONTROL PLA

C-7 TEMPORARY TRAFFIC CONTROL PLA

S-1 KEY PLAN & PROFILE

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S-6 GENERAL PLAN

**ELEVATIONS** 

LONGITUDINAL SECTION
CULVERT DETAILS

**Drawing Index** 



NOVEMBER 2023



ssued For:

PERMITTING

READING, MA | BOSTON, MA | FOXBOROUGH, MA | WORCESTER, MA | WOBURN, MA | CATAUMET, MA | CHATHAM, MA | SOUTH YARMOUTH, MA | PORTSMOUTH, NH | MANCHESTER, NH | WATERBURY, VT | ROCKY HILL, CT | ALBANY, NY | HOPEWELL JUNCTION, NY | CHARLESTON, SC | COLUMBIA, SC | FORT MYERS, FL

# **GENERAL NOTES**

- 1. TOPOGRAPHICAL INFORMATION BASED ON AN ON THE GROUND SURVEY PERFORMED BY WESTON & SAMPSON PE, LS LA, PC. ON DECEMBER 9, 2021.
- 2. HORIZONTAL DATUM IS MASSACHUSETTS STATE PLANE COORDINATE SYSTEM (MAINLAND NAD83) AND VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM (NAVD) 1988.
- 3. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL DIG TEST PITS WITH THE LOCATIONS BEING APPROVED BY THE ENGINEER PRIOR TO COMMENCEMENT OF WORK TO EXACTLY LOCATE EXISTING UTILITIES.
- 4. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION OF THE CONFLICT.
- 5. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY OWNER. ANY ALTERATIONS SHALL BE INCIDENTAL TO THE PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR THE TEMPORARY SUPPORT OF ALL UTILITIES TO REMAIN IN PLACE AND SHALL DESCRIBE IN WRITING, TO THE SATISFACTION OF THE ENGINEER, HIS METHOD OF TEMPORARY SUPPORT.
- 6. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
- 7. THE TERM "PROPOSED (PROP)" INDICATES WORK TO BE CONSTRUCTED USING NEW MATERIALS OR, WHERE APPLICABLE, RE-USING EXISTING MATERIALS IDENTIFIED AS "REMOVE AND RESET (R&R)".
- ALL EXISTING STATE, COUNTY AND TOWN LOCATION LINES AND PRIVATE PROPERTY LINES HAVE BEEN ESTABLISHED FROM AVAILABLE INFORMATION AND THEIR EXACT LOCATION ARE NOT GUARANTEED.
- 9. ALL EXCESS MATERIAL FROM ROADWAY RECONSTRUCTION OR THE EXCAVATION PROCESS SHALL BE REUSED ON SITE OR REMOVED FROM THE SITE AND DISPOSED OF IN A LEGAL AND PROPER MANNER.
- 10. THE CONTRACTOR SHALL CALL DIGSAFE AT 1-888-344-7233 AT LEAST 72 HOURS, SATURDAYS, AND HOLIDAYS EXCLUDED, PRIOR TO EXCAVATING AT ANY LOCATION. A COPY OF THE DIGSAFE PROJECT REFERENCE NUMBER(S) SHALL BE GIVEN TO THE TOWN PRIOR TO EXCAVATION.
- 11. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HIRE A PROFESSIONAL LAND SURVEYOR REGISTERED IN THE COMMONWEALTH OF MASSACHUSETTS FOR ALL LAYOUT WORK INCLUDING BASELINE LAYOUT. LAYOUT SHALL INCLUDE ALL PROPOSED WORK AS SHOWN IN THE CONTRACT DOCUMENTS, OR AS REQUIRED BY THE ENGINEER OR TOWN. ONCE LAID OUT, ALL PROPOSED WORK SHALL BE DEEMED ACCEPTABLE BY THE ENGINEER OR TOWN PRIOR TO ANY COMMENCEMENT OF WORK. ANY AND ALL WORK RELATED TO THE CONSTRUCTION LAYOUT SHALL BE INCIDENTAL TO THE PROJECT. THE CONTRACTORS SURVEYOR SHALL LOCATE CURRENT HORIZONTAL AND VERTICAL CONTROL POINTS AND CREATE ALTERNATE CONTROL POINTS OUTSIDE OF THE CONSTRUCTION ZONE. RESETTING OF CONTROL DUE TO CONSTRUCTION OPERATION WILL BE CONSIDERED INCIDENTAL TO THE PROJECT.
- 12. JOINTS BETWEEN HOT MIX ASPHALT TRENCH PAVEMENT AND SAWCUT EXISTING PAVEMENT SHALL BE SEALED WITH HOT MIX ASPHALT JOINT SEALANT.
- 13. IF DEEMED NECESSARY DUE TO THE WORK, THE CONTRACTOR SHALL COORDINATE WITH THE MUNICIPAL HIGHWAY DEPARTMENT, FIRE DEPARTMENTS, AND THE ENGINEERS FOR APPROVAL OF SHUTTING DOWN ANY EXISTING WATER MAINS AND SHALL ALSO OBTAIN APPROVAL FOR DISRUPTING ANY EXISTING SEWER FLOWS.
- 14. THE CONTRACTOR SHALL BE AWARE THAT ONLY CITY PERSONNEL ARE ALLOWED TO OPERATE WATER GATES AND HYDRANTS. ANY REQUESTS TO OPERATE THE GATES SHALL BE COORDINATED THROUGH THE ENGINEER.
- 15. THE EXISTING GAS MAIN LOCATIONS ARE SHOWN IN AN APPROXIMATE LOCATION. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE GAS COMPANY PRIOR TO COMMENCEMENT OF ANY WORK AND CONFIRMING SIZES, TYPES OF GAS LINES, AND EXACT LOCATIONS OR CHANGE OF PIPE TYPE. ALL COORDINATION AND ARRANGEMENTS WITH THE UTILITY COMPANIES SHALL BE INCIDENTAL TO THE PROJECT. ANY DELAY IN WORK DUE TO CONFLICTS WITH THE PROPOSED WORK AND ACTUAL LOCATION OF EXISTING GAS MAIN SHALL BE INCIDENTAL TO THE PROJECT.
- 16. THE CONTRACTOR SHALL COORDINATE ANY WORK FOR THE PROJECT WITH ALL ADJACENT/CONCURRENT PROJECTS AND CONTRACTORS.
- 17. THE CONTRACTOR SHALL INSTALL PRIOR TO COMMENCEMENT OF WORK, MAINTAIN, AND REMOVE AT THE END OF THE PROJECT INLET SEDIMENT CONTROL BAGS IN ALL CATCH BASINS, WITHIN OR ADJACENT TO THE PROJECT LIMITS. THE CONTRACTOR SHALL ALSO MAINTAIN SILT FENCE AND COMPOST FILTER TUBES AS SHOWN ON THE PLANS THROUGHOUT THE DURATION OF THE PROJECT AND REMOVE AT THE END.
- 18. ANY GRASS AREAS DISTURBED BY THE WORK SHALL BE RESTORED WITH LOAM AND SEED.
- 19. ANY LANDSCAPED AREAS DISTURBED BY THE WORK SHALL BE RESTORED TO EXISTING CONDITIONS WITH EXISTING OR NEW GROUND COVER MATERIALS AS DIRECTED BY THE ENGINEER. ANY PLANTS, SHRUBS, OR FLOWERS DISTURBED BY THE WORK SHALL BE RESET TO EXISTING CONDITIONS OR REPLACED WITH NEW PLANTS, SHRUBS, OR FLOWERS AS DIRECTED BY THE ENGINEER. ALL WORK TO RESTORE LANDSCAPE AREAS, NEW GROUND COVER MATERIALS, NEW PLANTS, NEW SHRUBS, OR NEW FLOWERS REQUIRED BY THE ENGINEER SHALL BE INCIDENTAL TO THE PROJECT.
- 20. CONTRACTOR TO COORDINATE WITH UTILITY POLE OWNERS IN AREAS WHERE UNDERGROUND UTILITY WORK IS WITHIN CLOSE PROXIMITY AND POSSIBLE UTILITY POLE SHORING IS REQUIRED WHILE INSTALLING PROPOSED UTILITIES.
- 21. RAISE AND ADJUST FRAMES AND GRATES, FRAMES AND COVERS AND GATE BOXES PRIOR TO PAVEMENT OVERLAY.
- 22. DRAINAGE ELEVATIONS ARE PROVIDED FOR DESIGN PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY LOCATIONS OF EXISTING UTILITIES THAT MAY CONFLICT WITH THE PROPOSED DRAINAGE BY TEST PIT. ANY FIELD ADJUSTMENTS REQUIRED WILL BE MADE AS APPROVED BY THE ENGINEER. THE DRAINAGE STRUCTURES SHALL BE ORDERED ONLY AFTER THE CONTRACTOR VERIFIES ELEVATIONS FOR THE CONSTRUCTIBILITY OF THE DRAINAGE SYSTEM. ANY FIELD ADJUSTMENTS TO LINE & GRADE UP TO A DEPTH OF 5' SHALL BE INCLUDED IN THE COST OF THE PIPE. PIPE EXCAVATION GREATER THAN 5' WILL BE PAID UNDER CLASS B TRENCH EXCAVATION.

# **ABBREVIATIONS**

# UTILITIES

SWID STORM WATER TREATMENT UNIT	LP C.I.T. F&G F&C FE CIP RCP CMP DI ACCM PIPE WG HYD DS INV. PVC UP CB MH HDPE CBCI RIM INV GI SMH S STL SWTU	LIGHT POLE CHANGE IN TYPE FRAME AND GRATE FRAME AND COVER FLARED END CAST IRON PIPE REINFORCED CONCRETE PIPE CORRUGATED METAL PIPE DUCTILE IRON PIPE ASPHALT COATED CORRUGATED METAL PIPE WATER GATE HYDRANT DOWN SPOUT INVERT ELEVATION POLYVINYL CHLORIDE UTILITY POLE CATCH BASIN MANHOLE DRAIN MANHOLE HIGH DENSITY POLYETHYLENE CATCH BASIN CURB INLET RIM ELEVATION INVERT GUTTER INLET SEWER MANHOLE SLOPE STEEL STORM WATER TREATMENT UNIT

# **GENERAL**

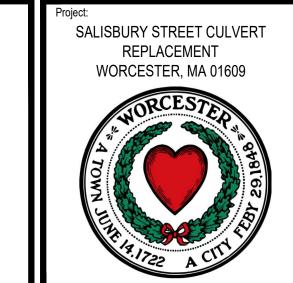
<u>OLIALIO (L</u>	
N.T.S.	NOT TO SCALE
B.M.	BENCH MARK
ABAN.	ABANDON
MB	MAIL BOX
GRAN. CURB	GRANITE CURB
(OR GC)	
EXIST.	EXISTING
(OR EX.)	
FDN.	FOUNDATION
FL (OR <b>E</b> )	FLOW LINE
P.	PROPERTY LINE
PI	POINT OF INTERSECTION
PVMT	PAVEMENT
P.W.W.	PAVED WATERWAY
RC	REINFORCED CONCRETE
REM.	REMOVE
REMOD.	REMODEL
RET.	RETAIN
R.O.W.	RIGHT- OF- WAY
R.R.	RAILROAD
R&R	REMOVE AND RESET
R&S	REMOVE AND STACK
R&D	REMOVE AND DISCARD
SB	STONE BOUND
SCB	SPECIAL CATCH BASIN
W/	WITH
PCC	POINT OF COMPOUND CURVATURE
SW	SIDEWALK
HMA	HOT MIX ASPHALT
SGC	SLOPED GRANITE CURB
BC	HOT MIX ASPHALT CURB
RET. WALL	RETAINING WALL
CC	CONCRETE CURB
CONT.	CONTINUED
MPH	MILES PER HOUR
TYP.,	TYPICAL
OR (TYP.)	TITIOAL
ROE	RIGHT OF ENTRY
N/F	NOW OR FORMERLY
PROP.	PROPOSED
ADJ.	ADJUST
©EM. CONC.	CEMENT CONCRETE
B	BASELINE
CONST.	CONSTRUCTION
TEMP.	TEMPORARY
SPEC.	SPECIFICATIONS
REHAB.	REHABILITATION
P.	PROPERTY LINE
WRF	WOOD RAIL FENCE
CTE	CONNECT TO EXISTING
SWTU	STORM WATER TREATMENT UNIT
C.J.	
REINF.	CONSTRUCTION JOINT
PC	REINFORCEMENT
PT	POINT OF TANCENCY
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANCENCY
. v I	POINT OF VERTICAL TANGENCY

# PAVEMENT MARKING SYMBOLS

<b>EXISTING</b>	PROPOSED	
DBYL	DBYL	DOUBLE YELLOW LINE
SWL	SWL	SOLID WHITE LINE
	SL	STOP LINE

# GENERAL SYMBOLS

EXISTING	PROPOSED	
	св 🖽	CATCH BASIN
	CBCI	CATCH BASIN CURB INLET
	$\mathbb{H}$	LEACHING GALLEY
		CURB (OR BERM)-TYPE NOTED
		EDGE OF ROAD
☐ HH		HANDHOLE (NUMBER AS NOTED)
	— E——Ē—— E——	ELECTRIC MANHOLE
	—	TELEPHONE MANHOLE
	<u>\$</u>	SEWER MANHOLE
	©	DRAINAGE MANHOLE OTHER MANHOLE
gv ⋈	Ğv	GAS GATE
⊠ wv ⊠	××	WATER GATE VALVE
Q	<b>-</b>	HYDRANT
	<b>®</b>	WELL
<b>L</b> .	<b>○</b> □	LIQUEDOLE
Q	OR LP	LIGHTPOLE
	<b>↓</b>	
	D	DRAIN PIPE
SS	s s	SEWER MAIN
	S	SEWER MAIN BY P.C.
—— E———	—— E—— E——	ELECTRIC DUCT TELEPHONE/COMMUNICATIONS/FIRE ALARM
—— C———	T T	GARAGE WASTE LINE
	GW	GARAGE WASTE LINE BY P.C.
	GW	VENTS BY P.C.
	—— GAS ——— GAS ———	GAS MAIN
W	w	WATER MAIN
— OHW — — ОНW — —	OHW	OVERHEAD WIRES
GUARD RAIL	OR .	CLIADD DAIL (SIZE AND TYDE NOTED)
LABEL / DATE		GUARD RAIL (SIZE AND TYPE NOTED)
		HIGHWAY / PROPERTY BOUND (TYPE NOTED)
NAME		CITY OR TOWN OR COUNTY LAYOUT LINE
12 N00° 00'00"E +57.59		CITY,TOWN OR COUNTY BOUNDARY BASE OR SURVEY LINE
PC		CENTERLINE OF CONSTRUCTION
—— P—— ——		PROPERTY LINE
·C	WCR	
	/   	WHEELCHAIR RAMP (WCR)
Les Francis		
ENDE ENME	SEE PLANS	TREE (SIZE AND TYPE NOTED)
CLF		
<b>or</b> Wood fenc <u>e</u>	SEE PLANS	FENCE (SIZE AND TYPE NOTED)
WOOD I LINCE	OLL I LANG	EASEMENT LINE/ FUTURE CITY PROPERTY LINE
		MASSDOT STANDARD
M#.#.#		SPECIFICATION REFERENCE
	TP-2	NUMBER
TP1	OR TP1	TEST PIT
MON WELL	IFI	MONITORING WELL
(TYP)	—— онw —— онw ——	UTILITY POLE/OVERHEAD WIRES
	' - <b>●</b>	GUY POLE
FLAG POLE		FLAG POLE
	<del>-</del>	SIGN
		TREE LINE
<b>.</b> B	0	BOLLARD
		SAWCUT
	<del></del>	EROSION CONTROL (SPECIFIED ON PLANS)
<del>\$</del>		OBSERVATION WELL
		LIMIT OF WORK
		WETLAND BUFFER



# Weston & Sampson

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Revisions

Revisions:		
No.	Date	Description
COA:		



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Date: 11 / 10 / 2023

Drawn By: CTC

Reviewed By: RP/JWS

Approved By: SRB

W&S Project No.: ENG22 -0381

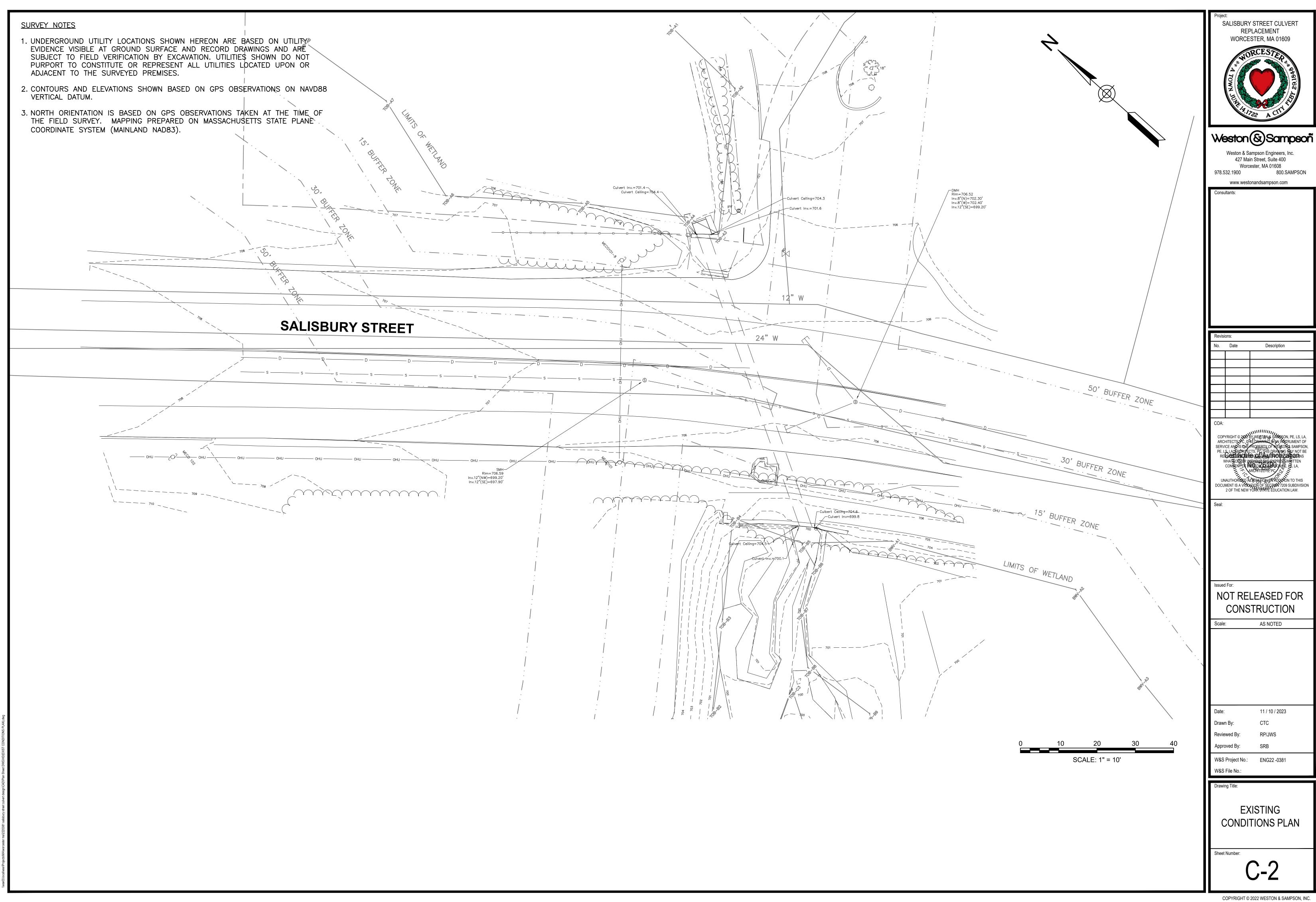
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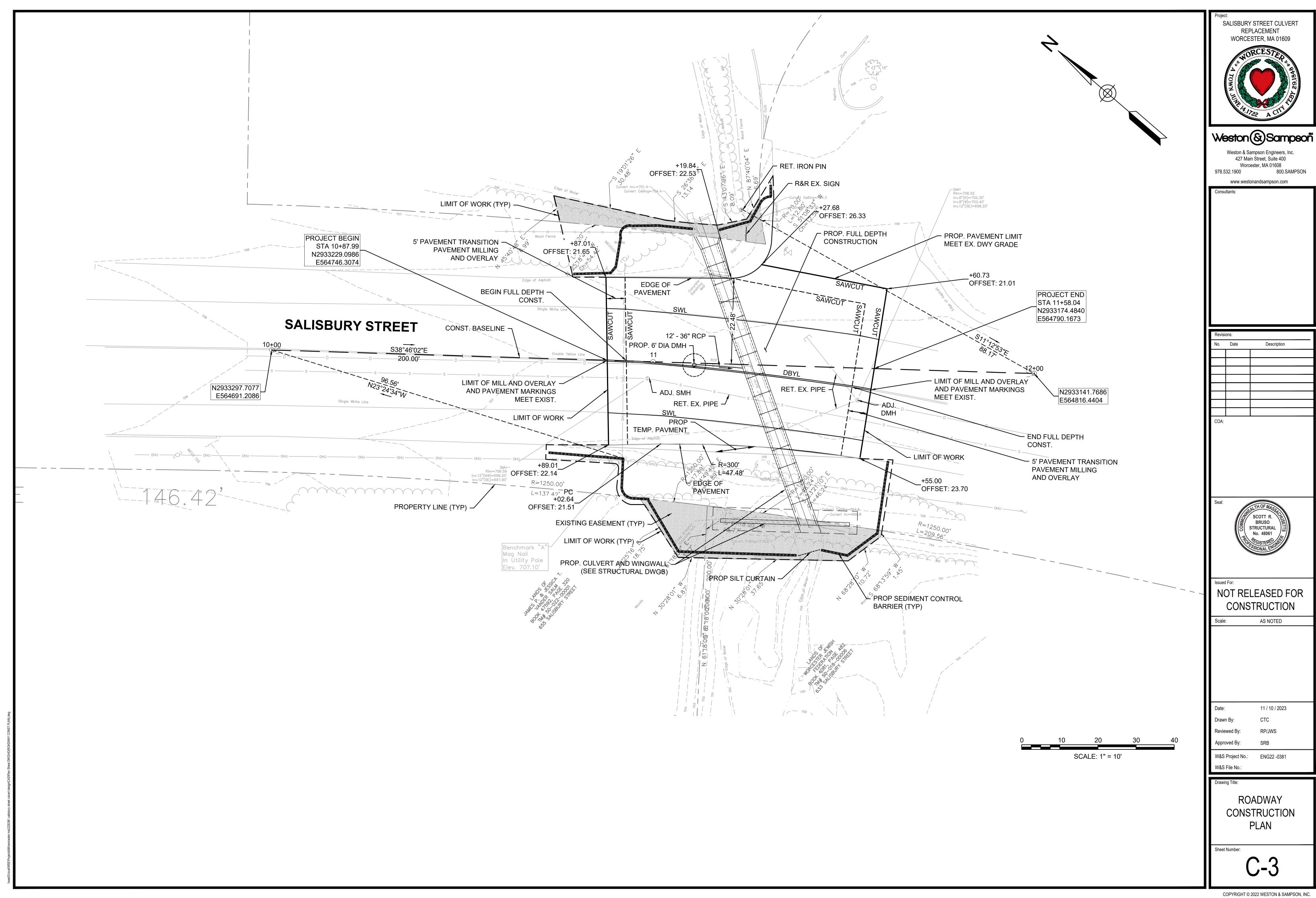
GENERAL NOTES &

LEGEND

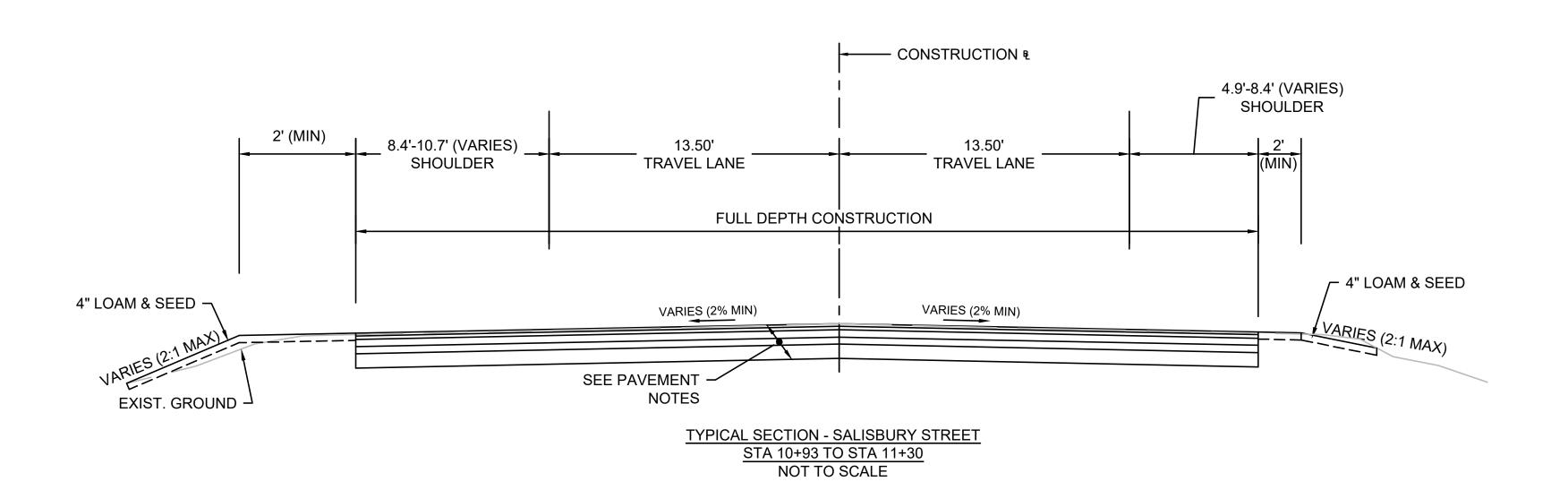
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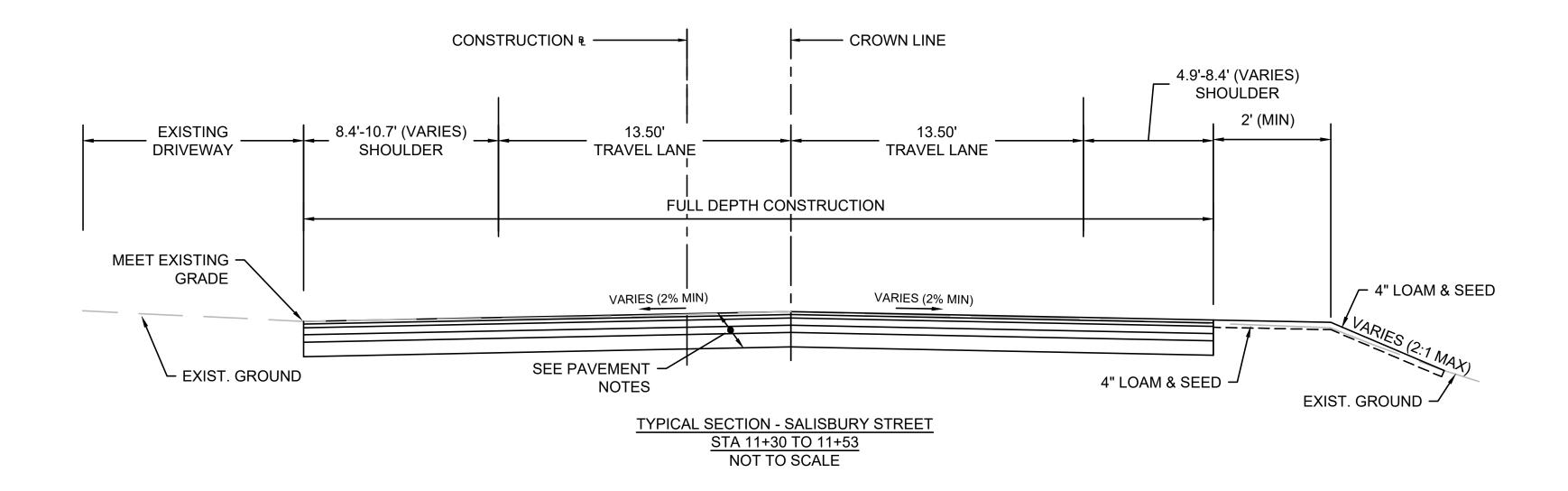
C-1

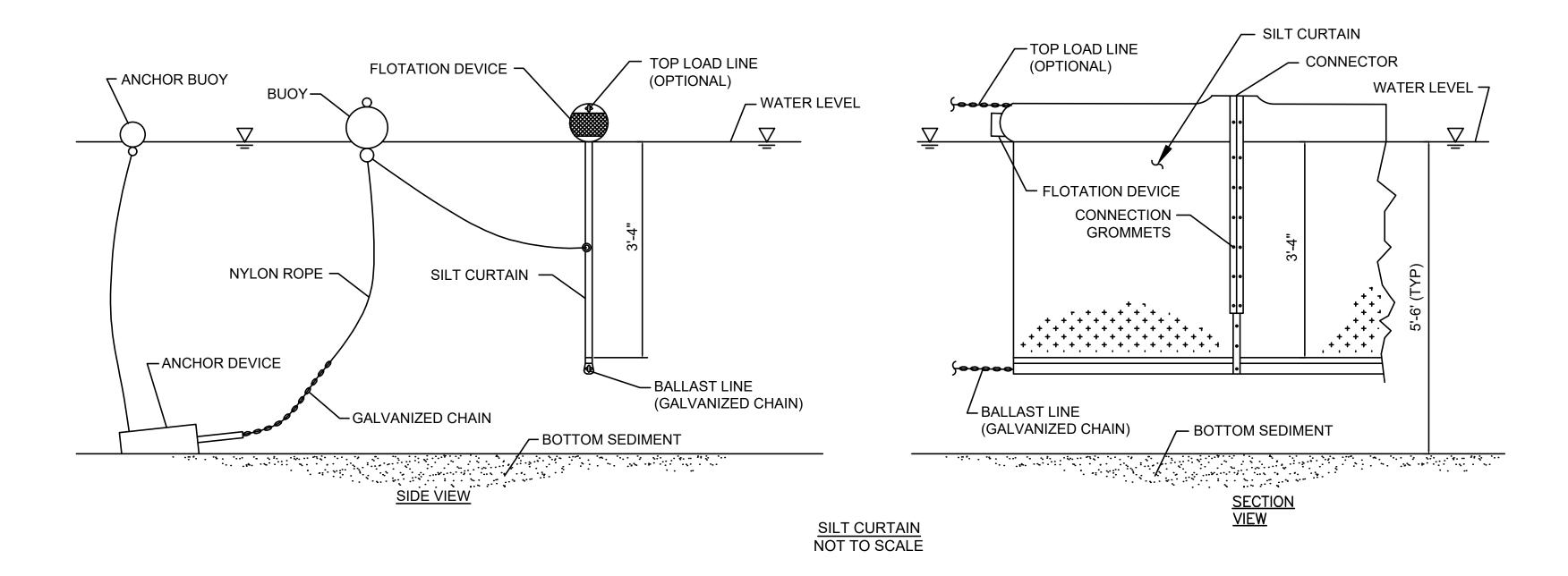




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### PAVEMENT NOTES

### PAVEMENT MILLING AND OVERLAY:

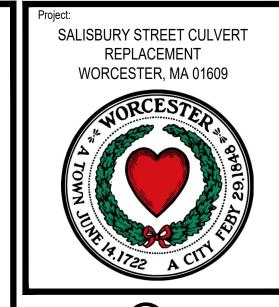
- $1\frac{1}{2}$ " SUPERPAVE BRIDGE SURFACE COURSE 9.5 (SSC-B-9.5) OVER ASPHALT EMULSION FOR TACK COAT OVER
- 1 ½" PAVEMENT MICRO MILLING

### **ROADWAY FULL DEPTH RECONSTRUCTION:**

- $1\frac{1}{2}$ " SUPERPAVE BRIDGE SURFACE COURSE 9.5 (SSC-B-9.5) OVER ASPHALT EMULSION FOR TACK COAT OVER
- 2 ½" SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER
- ASPHALT EMULSION FOR TACK COAT OVER
- 4" SUPERPAVE BASE COURSE 37.5 (SBC-37.5) OVER
- 4" DENSE GRADED CRUSHED STONE OVER
- 8" GRAVEL BORROW, TYPE B

### TEMPORARY PAVEMENT WIDENING:

- $1\frac{1}{2}$ " SUPERPAVE BRIDGE SURFACE COURSE 9.5 (SSC-B-9.5) OVER ASPHALT EMULSION FOR TACK COAT OVER
- $2\frac{1}{2}$ " SUPERPAVE INTERMEDIATE COURSE 12.5 (SIC-12.5) OVER 12" GRAVEL BORROW, TYPE B
- TACK COAT SHALL BE APPLIED AT RATE OF 0.09
  GALLON PER YARD OVER MILLED SURFACES AND 0.08
  GALLON PER SQUARE YARD OVER SMOOTH PAVED
  SURFACES.
- \* TOLERANCE FOR CONSTRUCTION ±0.5%



Weston & Sampson

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BRUSO
STRUCTURAL
No. 48061

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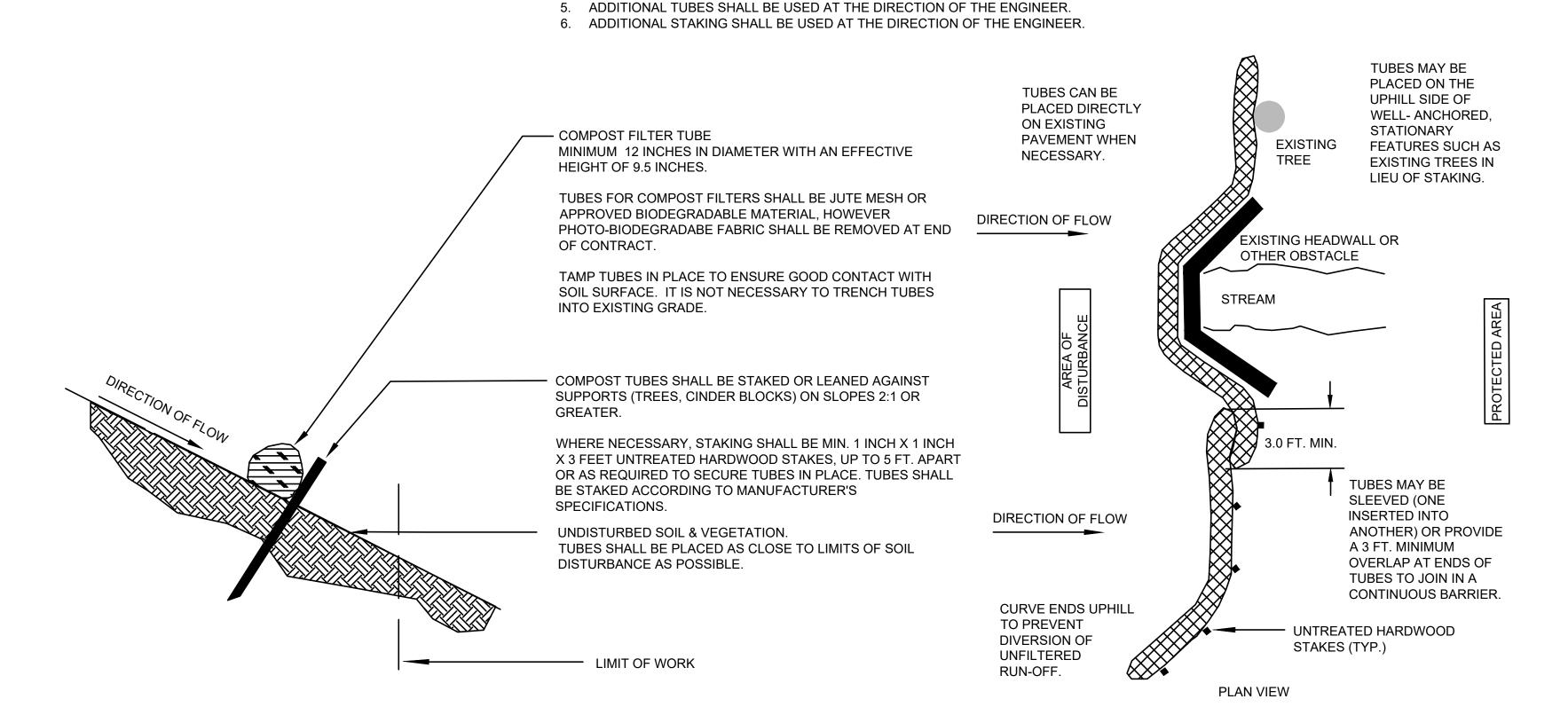
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CONSTRUCTION DETAILS 1

Sheet Number

**S-4** 



VARIES - 5' MIN.

SEE CONST. PLAN

PROPOSED PAVEMENT TRANSITION

(LONGITUDINAL SECTION)

NOT TO SCALE

/— SAWCUT EDGE

1 1/2"

MEET EXISTING

**EXISTING** 

PAVEMENT

PAVEMENT

EXISTING —

ROADWAY

1. PROVIDE A MINIMUM TUBE DIAMETER OF 12 INCHES FOR SLOPES UP TO 50 FEET IN LENGTH WITH A SLOPE

RATIO OF 3H:1V OR STEEPER. LONGER SLOPES OF 3H:1V MAY REQUIRE LARGER TUBE DIAMETER OR ADDITIONAL COURSING OF FILTER TUBES TO CREATE A FILTER BERM. REFER TO MANUFACTURER'S

3. TUBE LOCATION MAY BE SHIFTED TO ADJUST TO LANDSCAPE FEATURES, BUT SHALL PROTECT UNDISTURBED

SINGLE COMPOST FILTER TUBE
NOT TO SCALE

PROP FULL

DEPTH CONSTRUCTION

— 1 1/2" PAVEMENT MICRO MILLING

2. INSTALL TUBES ALONG CONTOURS AND PERPENDICULAR TO SHEET OR CONCENTRATED FLOW.

RECOMMENDATIONS FOR SITUATIONS WITH LONGER OR STEEPER SLOPES.

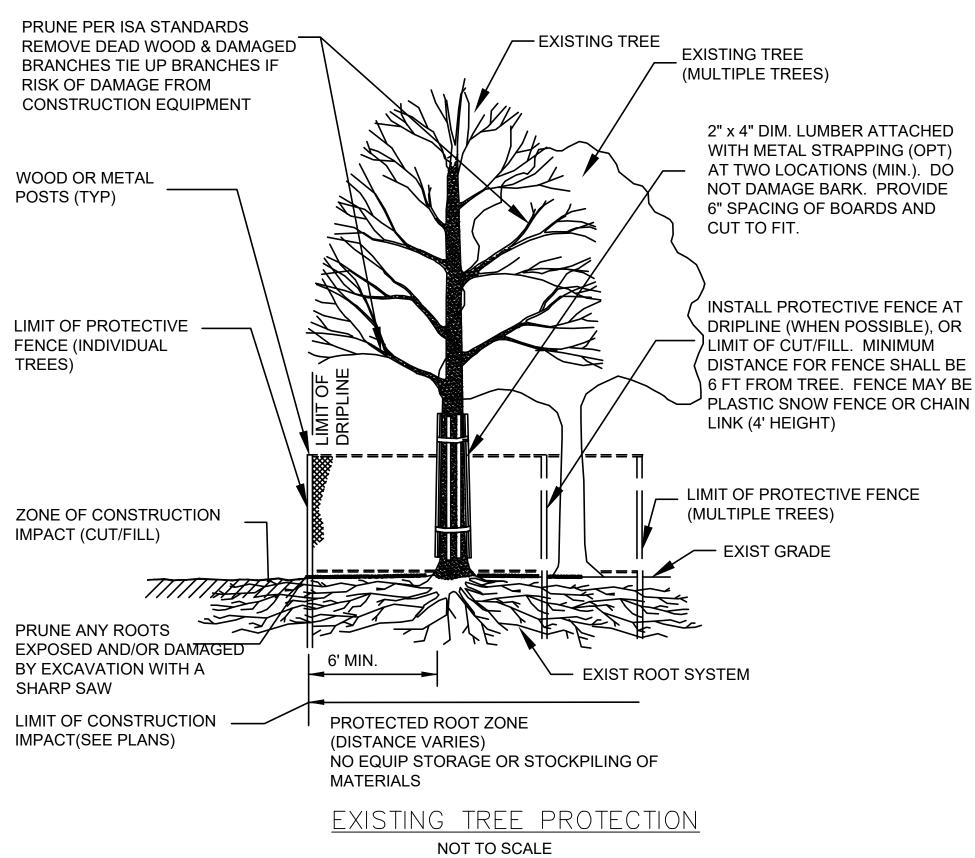
4. DO NOT INSTALL IN PERENNIAL, EPHEMERAL OR INTERMITTENT STREAMS.

AREA AND VEGETATION TO MAXIMUM EXTENT POSSIBLE.

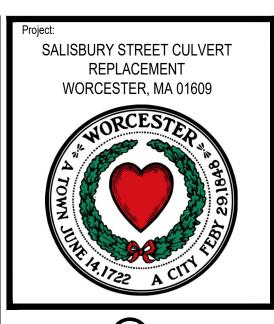
**GENERAL NOTES:** 

# NOTES:

- 1. EROSION CONTROL MEASURES SHALL BE INCORPORATED IN THE SEQUENCE OF CONSTRUCTION TO PREVENT SEDIMENT LADEN WATER FROM LEAVING THE SITE.
- 2. AREAS SUBJECT TO EROSION SHALL BE MINIMIZED IN TERMS OF TIME AND AREA.
- 3. IN GENERAL, WORK REQUIRING EROSION CONTROL INCLUDES EXCAVATIONS, FILLS, DRAINAGE, SWALES AND DITCHES, ROUGH AND FINISH GRADING, AND STOCKPILING OF EARTH.
- 4. DO NOT DISTURB VEGETATION AND TOPSOIL BEYOND THE PROPOSED LIMIT OF EROSION CONTROL BARRIER.
- 5. TEMPORARY SILT CONTROLS SHALL BE PLACED AS SHOWN ON THE PLAN. PERMANENTLY STABILIZE EACH COMPLETED SEGMENT OF CONSTRUCTION.
- 6. THE CONTRACTOR SHALL REMOVE TEMPORARY SILT CONTROLS AND ALL ACCUMULATED SILT AND DEBRIS AFTER COMPLETION OF CONSTRUCTION OPERATIONS.
- 7. SILT CONTROLS SHALL BE IN PLACE AT ALL TIMES DURING CONSTRUCTION.
- 8. THE CONTRACTOR SHALL REMOVE AND LEGALLY DISPOSE OF ALL SILT AND DEBRIS FROM EACH DRAINAGE STRUCTURE UPON COMPLETION OF THE PROJECT.
- 9. OBJECTS AND/OR AREAS DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION.
- 10. ALL DISTURBED AREAS SHALL BE RESTORED TO EXISTING GRADE. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE AS NEEDED.
- 11. SILT CONTROLS SHALL BE REMOVED UPON THE SATISFACTORY COMPLETION OF ALL WORK SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
- 12. SITE PERIMETER SHALL HAVE COMPOST FILTER TUBES INSTALLED AT THE LIMIT OF WORK.



NOTE: THIS DETAIL APPLIES TO THE TREES TO BE PROTECTED WITHIN LIMIT OF WORK



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Reviewed By: RP/JWS

Approved By: SRB

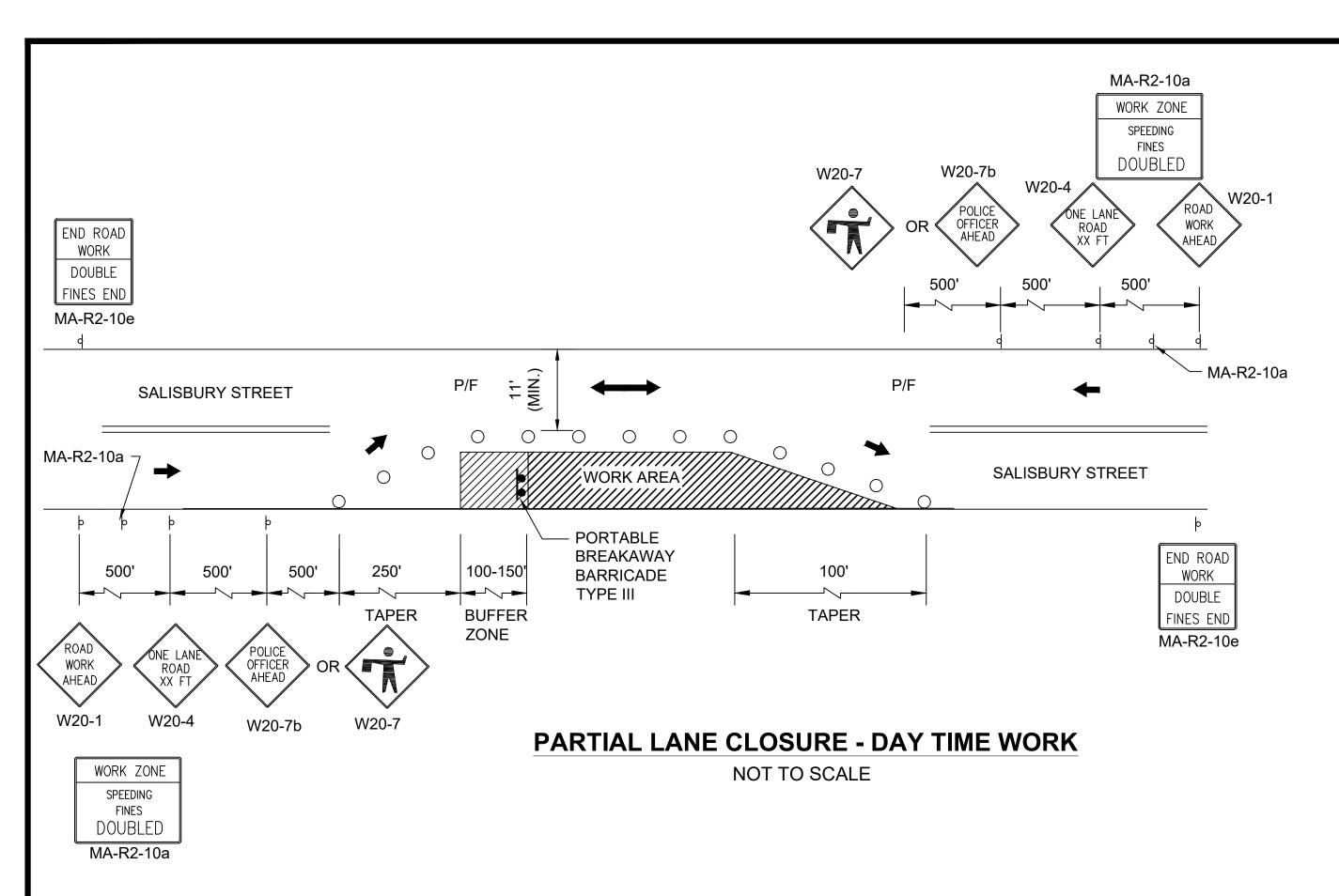
W&S Project No.: ENG22 -0381

CONSTRUCTION DETAILS 2

Sheet Number:

**6-5** 

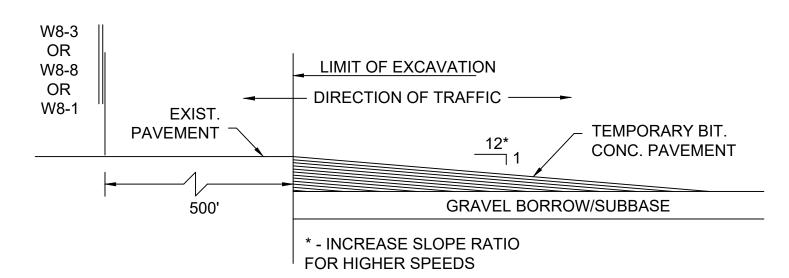
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# REFLECTORIZED ∕ DRUM 24" (MIN.) TRAVEL WAY Depth≥4"

# LATERAL DROP-OFF DETAIL

NOT TO SCALE



# SUGGESTED WORK ZONE WARNING SIGN SPACING

ROAD TYPE	DIST	ANCE BETWEEN SIGNS **	
NOAD TIFE	А	В	С
LOCAL OR LOW VOLUME ROADWAYS*	350	350	350
MOST OTHER ROADWAYS*	500	500	500
FREEWAYS AND EXPRESSWAYS*	1,000	1,500	2,640

- \* ROAD TYPE TO BE DETERMINED BY MASSDOT OFFICE OF TRANSPORTATION PLANNING.
- \*\* DISTANCES ARE SHOWN IN FEET. THE COLUMN HEADINGS A, B, AND C ARE THE DIMENSIONS SHOWN IN THE DETAIL/ TYPICAL SETUP FIGURES. THE A DIMENSION IS THE DISTANCE FROM THE TRANSITION OR POINT OF RESTRICTION TO THE FIRST SIGN. THE B DIMENSION IS THE DISTANCE BETWEEN THE FIRST AND SECOND SIGNS. THE C DIMENSION IS THE DISTANCE BETWEEN THE SECOND AND THIRD SIGNS. (THE "THIRD" SIGN IS THE FIRST ONE TYPICALLY ENCOUNTERED BY A DRIVER APPROACHING A TEMPORARY TRAFFIC CONTROL (TTC) ZONE.)

THE "THIRD" SIGN ABOVE IS TYPICALLY REFERRED TO AS AN "ADVANCE WARNING" SIGN ON THE TTCP SETUPS. THESE ADVANCE WARNING SIGNS ARE LOCATED PRIOR TO THE PROJECT LIMITS ON ALL APPROACHES (i.e. THE W20-1 SERIES (ROAD WORK XX FT) SIGNS), AND USUALLY REMAIN FOR THE DURATION OF THE PROJECT. ADDITIONAL SIGNS (i.e. "RIGHT LANE CLOSED 1 MILE" AND "LEFT LANE CLOSED 1 MILE") HAVE BEEN SHOWN IN SOME FIGURES AS EXAMPLES OF REINFORCEMENT SIGN PLACEMENT BUT ARE USED IN RARE OCCASIONS.

THE FIRST AND SECOND WARNING SIGNS ABOVE ARE REFERRED TO AS THE OPERATIONAL (DAY-TO-DAY) WORK ZONE SIGNS AND MAY BE MOVED DEPENDING ON WHERE THE SPECIFIC ROADWAY WORK FOR THAT DAY IS LOCATED.

MA-R2-10a SIGNS SHALL BE PLACED BETWEEN THE SECOND AND THIRD SIGNS AS DESCRIBED ABOVE.

MA-R2-10a, MA-R2-10e, AND W20-1 SERIES SIGNS ARE TO BE INCLUDED ON ALL DETAILS/TYPICAL SETUPS.

### NOTES:

- PLACEMENT OF ALL CONSTRUCTION SIGNS, DRUMS, BARRICADES, TRAFFIC DEVICES AND THE SHAPE, SIZE & COLOR OF ALL TEMPORARY TRAFFIC SIGNS SHALL CONFORM WITH THE LATEST EDITION OF MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND AMENDMENTS.
- 2. TEMPORARY CONSTRUCTION SIGNING AND ALL OTHER TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF ANY WORK.
- 3. ADVANCE WARNING SIGN PLACEMENT AND TAPER LENGTH SHALL BE ADJUSTED ACCORDING TO STREET CONDITIONS AND DRIVEWAY OPENINGS.
- 4. ALL DRUMS SHALL BE APPROXIMATELY PLACED AND RELOCATED AS NECESSARY TO MAINTAIN ADEQUATE ABUTTER ACCESS AT ALL TIMES.
- 5. THE CONTRACTOR SHALL NOTIFY EACH ABUTTER AT LEAST 24 HOURS IN ADVANCE OF THE START OF ANY WORK THAT WILL REQUIRE THE TEMPORARY CLOSURE OF ACCESS, SUCH AS EXISTING PAVEMENT EXCAVATION, TEMPORARY DRIVEWAY PAVEMENT PLACEMENT AND SIMILAR OPERATIONS.
- 6. NONESSENTIAL TRAFFIC CONTROL DEVICES SHALL BE COVERED OR REMOVED **DURING NON-WORKING HOURS.**
- 7. PEDESTRIANS SHALL BE PROVIDED WITH ACCESS AND SAFE PASSAGE THROUGH THE TEMPORARY TRAFFIC CONTROL ZONE AT ALL TIMES.
- 8. ADVISORY SPEED PLATES (W13-1) IF REQUIRED, SHALL BE DETERMINED BY THE ENGINEER.
- 9. MAINTAIN ONE LANE (MIN. 11' WIDTH) AT ALL TIMES DURING CONSTRUCTION.
- 10. DISTANCES ARE A GUIDE AND MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
- 11. MAXIMUM SPACING OF TRAFFIC DEVICES IN A TAPER (DRUMS OR CONES) IS EQUAL IN FEET TO THE SPEED LIMIT IN MPH.
- 12. ALL SIGNS SHALL BE MOUNTED ON THEIR OWN STANDARD SIGN SUPPORTS.

# TAPER LENGTH CRITERIA FOR TEMPORARY TRAFFIC CONTROL ZONES

TYPE OF TAPER	TAPER LENGTH (L)*
MERGING TAPER	AT LEAST L
SHIFTING TAPER	AT LEAST 0.5L
SHOULDER TAPER	AT LEAST 0.33L
ONE-LANE, TWO-WAY TRAFFIC TAPER	50 FT MIN. 100 FT MAX.
DOWNSTREAM TAPER	50 FT MIN. 100 FT MAX. PER LANE

# FORMULAS FOR DETERMINING TAPER LENGTHS

SPEED LIMIT (S)	TAPER LENGTH (L) FEET
40 MPH OR LESS	$L = \frac{WS^2}{60}$
45 MPH OR MORE	L= WS

WHERE: L = TAPER LENGTH IN FEET

W = WIDTH OF OFFSET IN FEET

S = POSTED SPEED LIMIT, OR OFF-PEAK 85TH-PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICAPATED OPERATING SPEED IN MPH

# TEMPORARY TRAFFIC SIGN SUMMARY

IDENTIFI-	SIZE O	F SIGN	TEXT	NOTES
CATION NUMBER	WIDTH	HEIGHT	IEXI	NOTES
MA-R2-10e	36"	48"	END ROAD WORK DOUBLE FINES END	
MA-R2-10a	48"	36"	WORK ZONE  SPEEDING FINES DOUBLED	PLACE SIGN BETWEEN FIRST AND SECOND ADVANCED WARNING SIGN OR AS DIRECTED BY THE ENGINEER
W1-4R	36"	36"		
W1-4L	36"	36"		
W8-1	36"	36"	BUMP	
W8-15	36"	36"	GROOVED PAVEMENT	
W8-24	36"	36"	STEEL PLATE AHEAD	
W3-3	36"	36"		BLACK LEGEND ON FLUORESCENT ORANGE BACKGROUND
W13-1p	18"	18"	XX M.P.H.	ADVISORY SPEED LIMIT AS DETERMINED BY THE ENGINEER
W20-1	36"	36"	ROAD WORK AHEAD	
W20-4	36"	36"	ONE LANE ROAD XXX	
W20-7	36"	36"		
W20-7b	36"	36"	POLICE OFFICER AHEAD	
R10-6	36"	48"	STOP HERE ON RED	

# **LEGEND**

	LLGLIN
	REFLECTORIZED CHANNELIZING DEVICE
$\circ$	REFLECTORIZED DRUM
<b>←</b>	TRAFFIC FLOW DURING CONSTRUCTION
	NORMAL TRAFFIC FLOW
P/F	POLICE/FLAGGER DETAIL
<b>;</b>	PORTABLE BREAKAWAY BARRICADE TYPE III

TEMPORARY IMPACT ATTENUATOR TEMPORARY SIGNAL

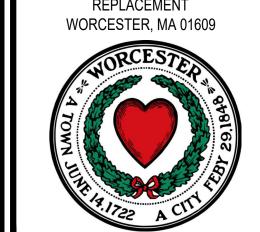
CONSTRUCTION SIGN **WORK AREA** 

N.T.S. **NOT TO SCALE** ••• ARROW BOARD

> TEMPORARY PRECAST PORTABLE CONCRETE BARRIER W/WARNING LIGHTS

STOP LINE

SALISBURY STREET CULVERT REPLACEMENT

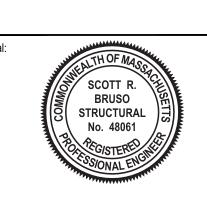


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Date Description



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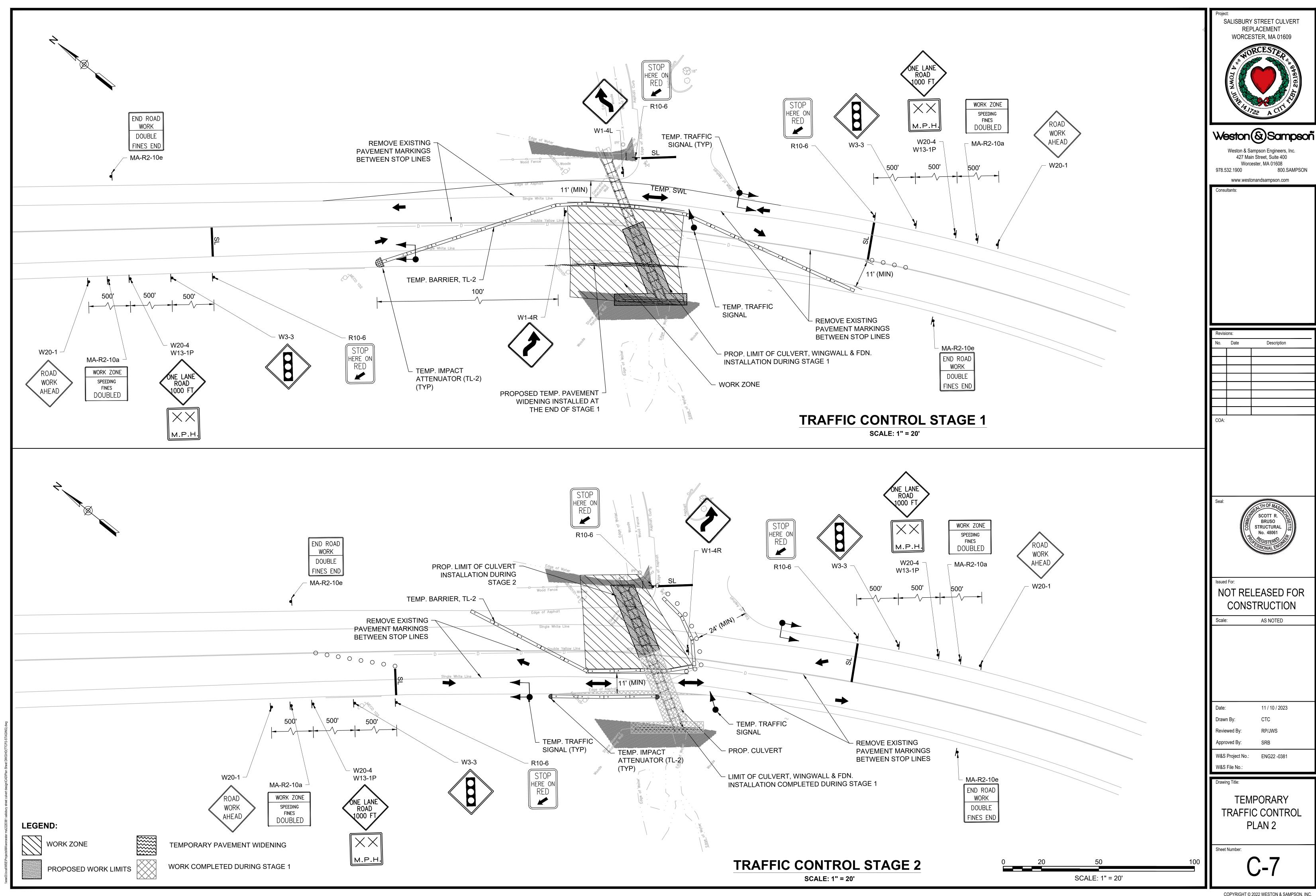
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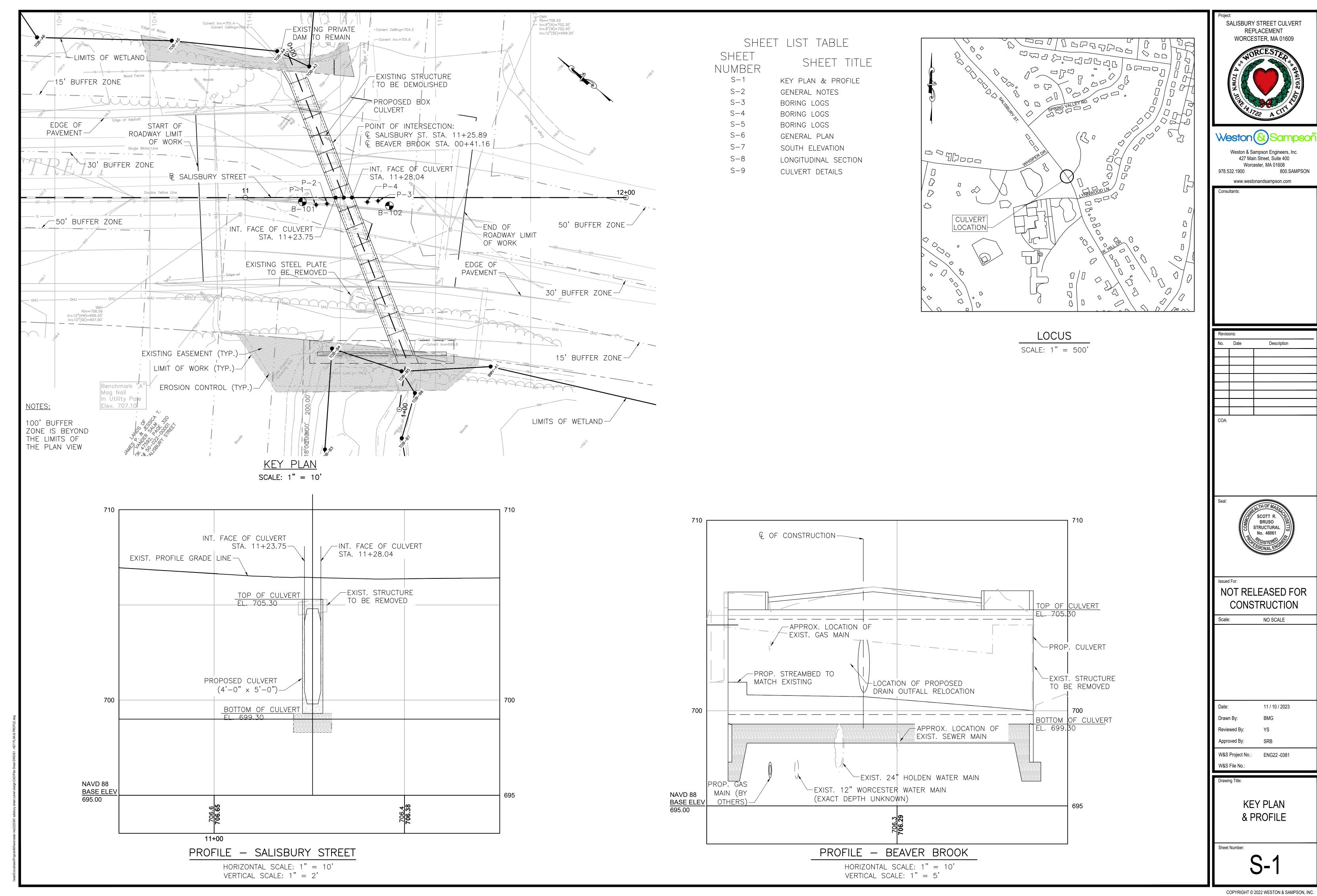
CTC Reviewed By: RP/JWS Approved By: SRB W&S Project No.: ENG22 -0381

W&S File No.

**TEMPORARY** TRAFFIC CONTROL PLAN 1

Sheet Number:





# **GENERAL NOTES**

### <u>DESIGN</u>:

IN ACCORDANCE WITH THE 2020 AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS LRFD BRIDGE DESIGN SPECIFICATIONS FOR HL-93 LOADING.

### <u>BENCHMARK</u>:

MAG NAIL SET UP IN UTILITY POLE, ELEVATION 707.10'.

ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988.

### SURVEY:

ELECTRONIC SURVEY BY WESTON & SAMPSON PE, LS, LA, PC ON DECEMBER 9, 2021. WETLAND FLAGGING WAS PERFORMED BY WESTON & SAMPSON ON APRIL 28, 2022.

### SCALES:

SCALES NOTED ON THE PLANS ARE NOT APPLICABLE TO REDUCED SIZE PRINTS. DIVIDE SCALES BY 2 FOR HALF-SIZE PRINTS (A3).

# **FOUNDATIONS:**

FOUNDATIONS MAY BE ALTERED, IF NECESSARY, TO SUIT CONDITIONS ENCOUNTERED DURING CONSTRUCTION, WITH APPROVAL OF THE ENGINEER.

### UNSUITABLE MATERIAL:

ALL UNSUITABLE MATERIAL SHALL BE REMOVED WITHIN THE LIMITS OF THE FOUNDATIONS OF THE STRUCTURE, AS DIRECTED BY THE ENGINEER.

### **CONCRETE:**

ALL CONCRETE SHALL BE 4000 PSI HP CONCRETE, EXCEPT AS NOTED BELOW: SIDEWALKS, AND HIGHWAY GUARDRAIL TRANSITIONS SHALL BE 5000 PSI HP CONCRETE. FOOTINGS SHALL BE 4000 PSI HP EARLY STRENGTH CONCRETE.

### CONTROLLED DENSITY FILL:

CONTROLLED DENSITY FILL (CDF) SHALL COMPLY WITH STANDARD MATERIAL SPECIFCATIONS M4.08.0. CDF BETWEEN EXISTING AND PROPOSED ABUTMENTS SHALL BE TYPE 2E. ALL OTHER CDF SHALL BE TYPE 2. TESTS PROVING EASE OF EXCAVATABILITY SHOULD BE MADE BEFORE FINAL PLACEMENT.

# REINFORCEMENT:

REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M31 GRADE 60. UNLESS OTHERWISE NOTED ON THE CONSTRUCTION DRAWINGS, ALL BARS SHALL BE LAPPED AS FOLLOWS:

MOE	DIFICATION CONDITION	<u>#4 BARS</u>	#5 BARS	#6 BARS
1.	NONE	16"	" 19 <b>"</b>	23"
2.	12" OF CONCRETE BELOW BAR	20"	25"	30"
3.	COATED BARS, COVER < 3d <sub>b</sub> , OR	23"	29"	34"
	CLEAR SPACING < 6db			
4.	COATED BARS, ALL OTHER CASES	18"	23"	27"
5.	CONDITION 2. AND 3.	26"	32"	39"
6.	CONDITION 2. AND 4.	24"	30"	36"

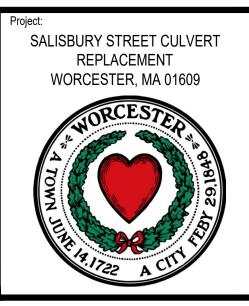
ALL OTHER BARS SHALL BE LAPPED AS SHOWN ON THE CONSTRUCTION DRAWINGS.

# MEMBRANE WATERPROOFING:

ALL MEMBRANE WATERPROOFING USED ON BRIDGE DECKS SHALL BE MEMBRANE WATERPROOFING FOR BRIDGE DECKS — SPRAY APPLIED.

# UTILITES:

LOCATIONS OF EXISTING UTILITES SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL LOCATE AND PROTECT FROM DAMAGE ALL EXISTING UTILITIES.



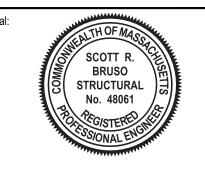
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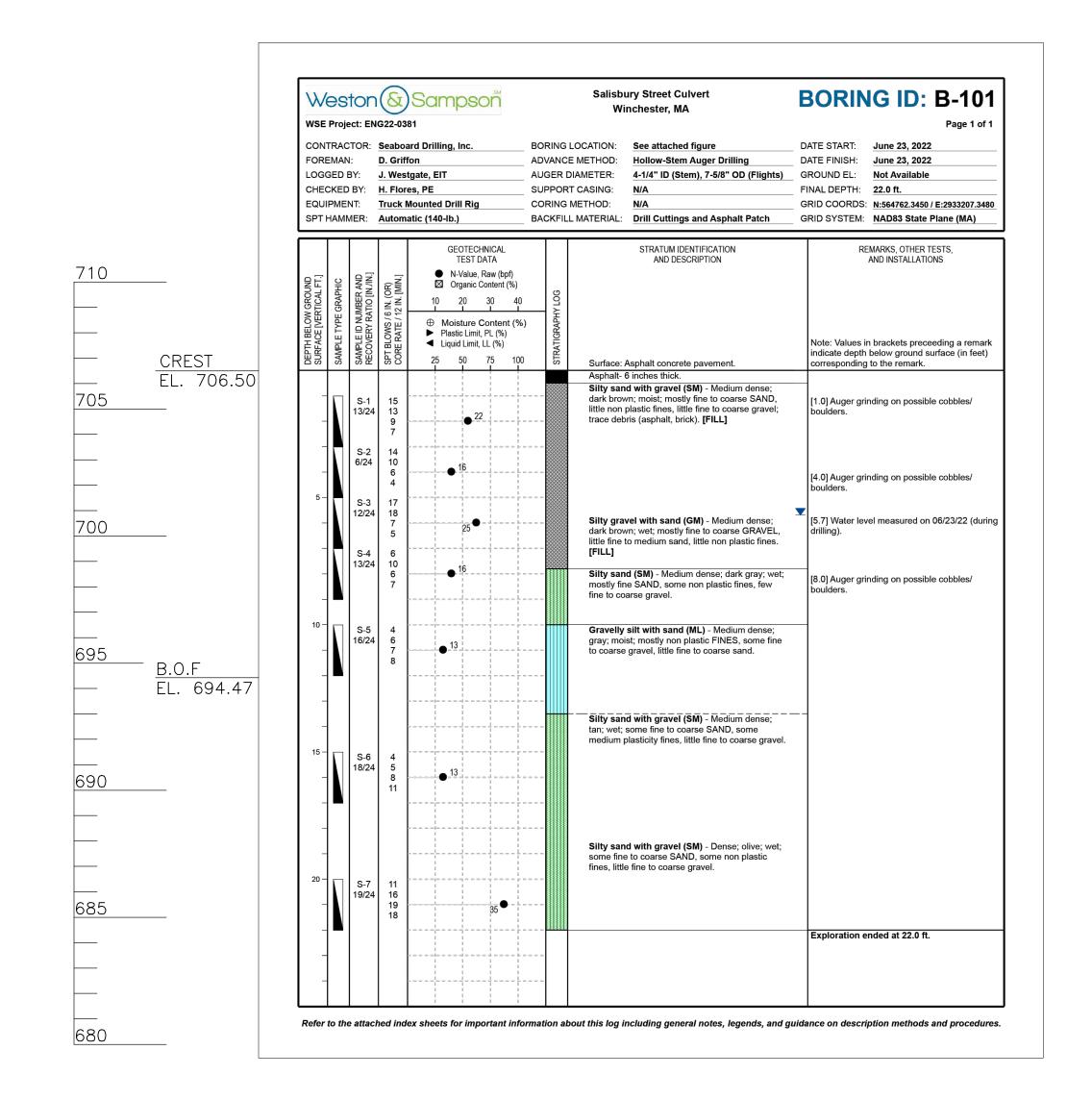
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Drawn By:	BMG
Reviewed By:	YS
Approved By:	SRB

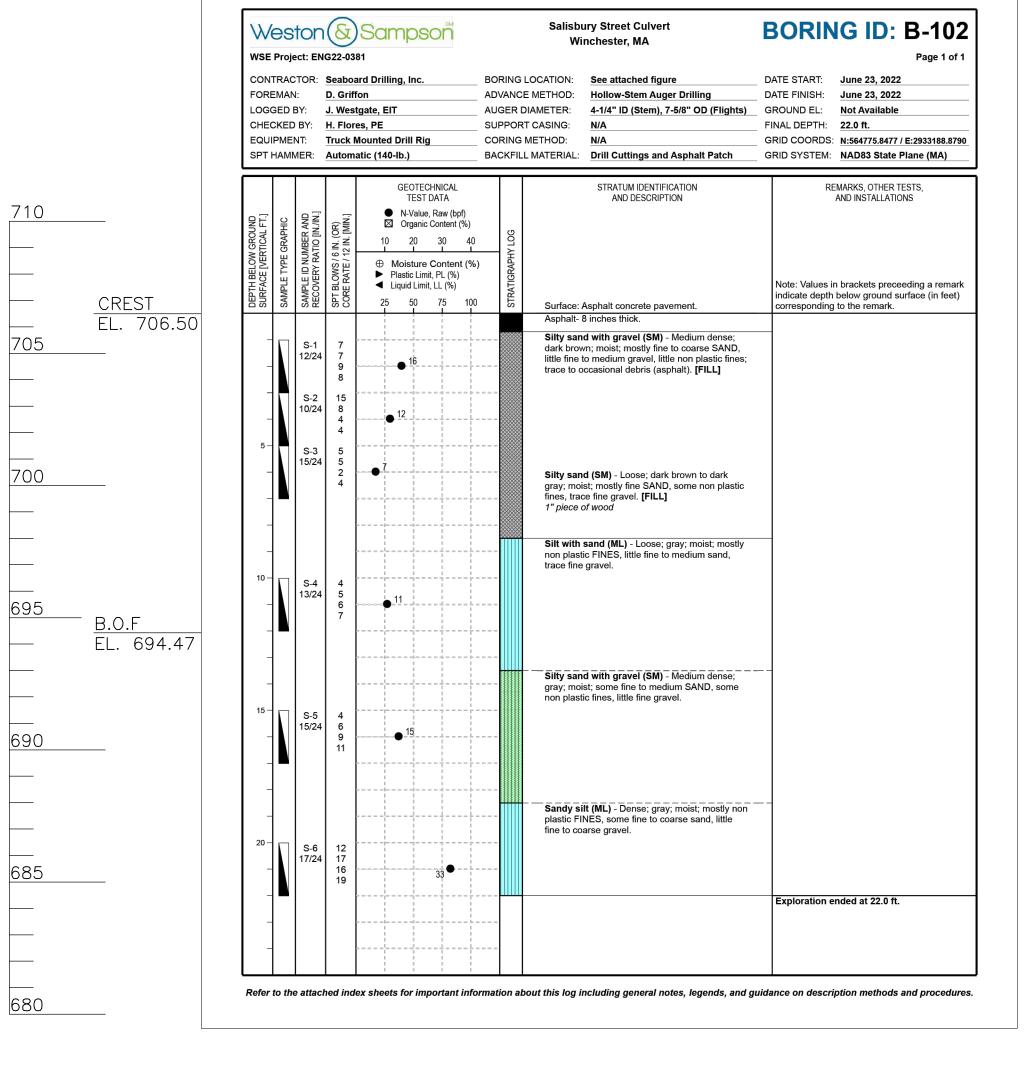
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W&S File No.:

**GENERAL NOTES** 

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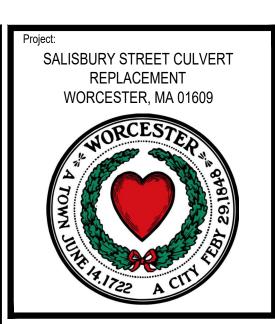
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# BORING/PROBE NOTES:

- 1. LOCATION OF BORING SHOWN ON THE PLAN THUS PLAN
- 3. BORINGS AND PROBES ARE TAKEN FOR PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS AND PROBE POINTS ONLY, BUT DO NOT NECESSARILY SHOW THE NATURE OF THE MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
- 4. WATER LEVELS SHOWN ON THE BORING LOGS WERE OBSERVED AT THE TIME OF TAKING BORINGS AND DO NOT NECESSARILY SHOW THE TRUE GROUND WATER LEVEL.
- 5. FIGURES IN COLUMNS INDICATE NUMBER OF BLOWS REQUIRED TO DRIVE A 2" I.D. SPLIT SPOON SAMPLER 24" USING A 140 POUND WEIGHT FALLING 30".
- 6. BORING SAMPLES ARE STORED AT A STORAGE FACILITY LOCATED ON ROUTE 114 (219 WINTHROP AVE.) LAWRENCE, MA. THE CONTRACTOR MAY EXAMINE THE SOIL AND SAMPLES BY CONTACTING THE MASSDOT GEOTECHNICAL SECTION AT 10 PARK PLAZA, BOSTON, MA.
- 7. ALL BORINGS WERE MADE IN JUNE 2022. ALL PROBES WERE MADE IN JUNE 2022.
- 8. BORINGS AND PROBES WERE MADE BY SEABOARD DRILLING, INC. (649 MEADOW ST. CHICOPEE, MA 01013)
- 9. THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 IS USED THROUGHOUT.



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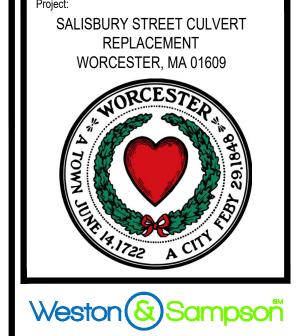
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**BORING LOGS** 

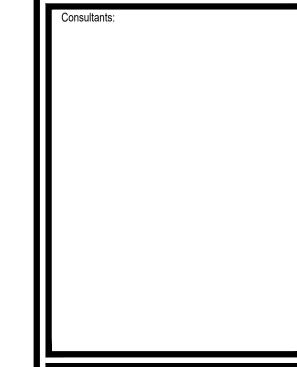
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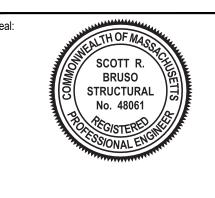


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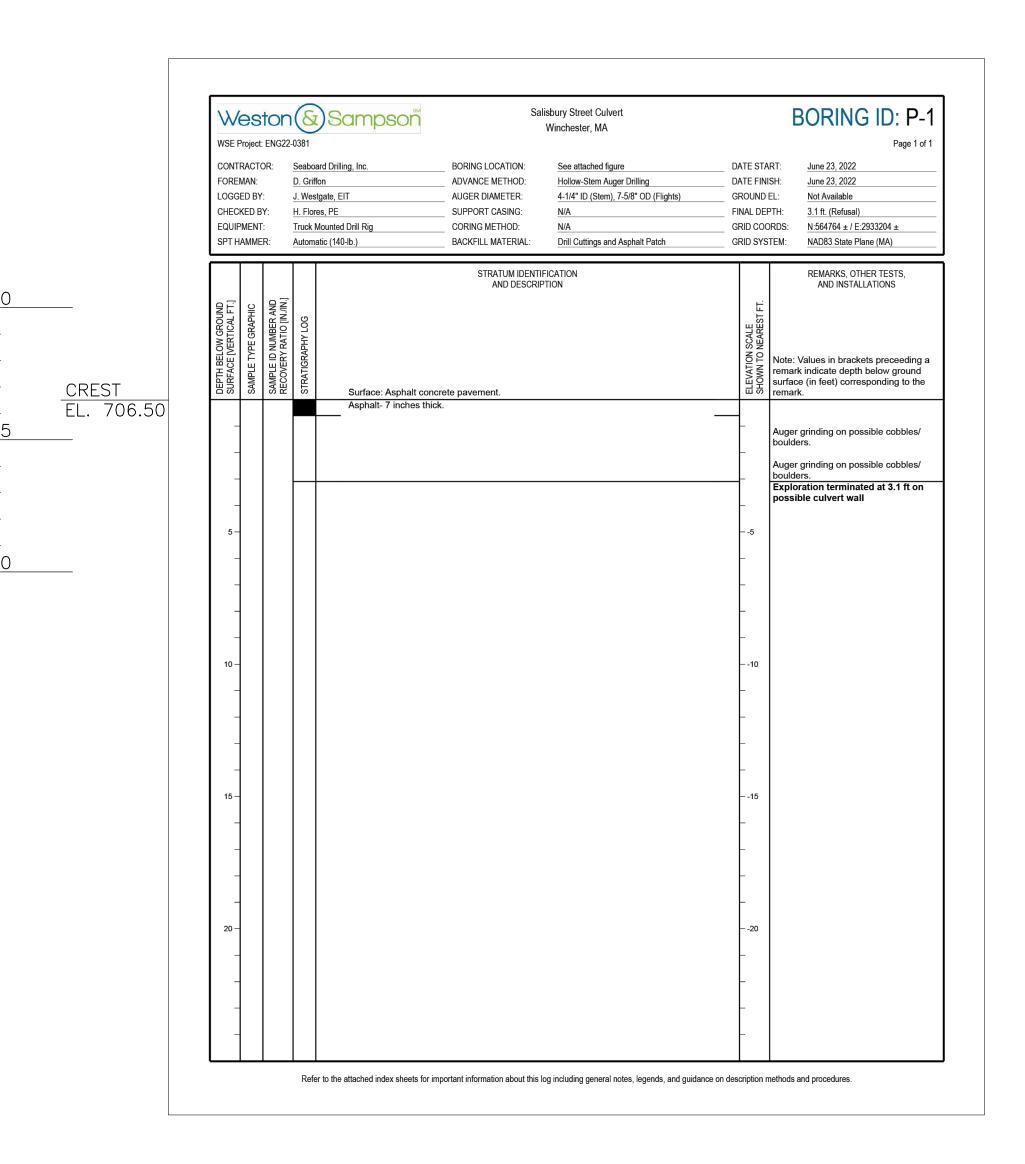
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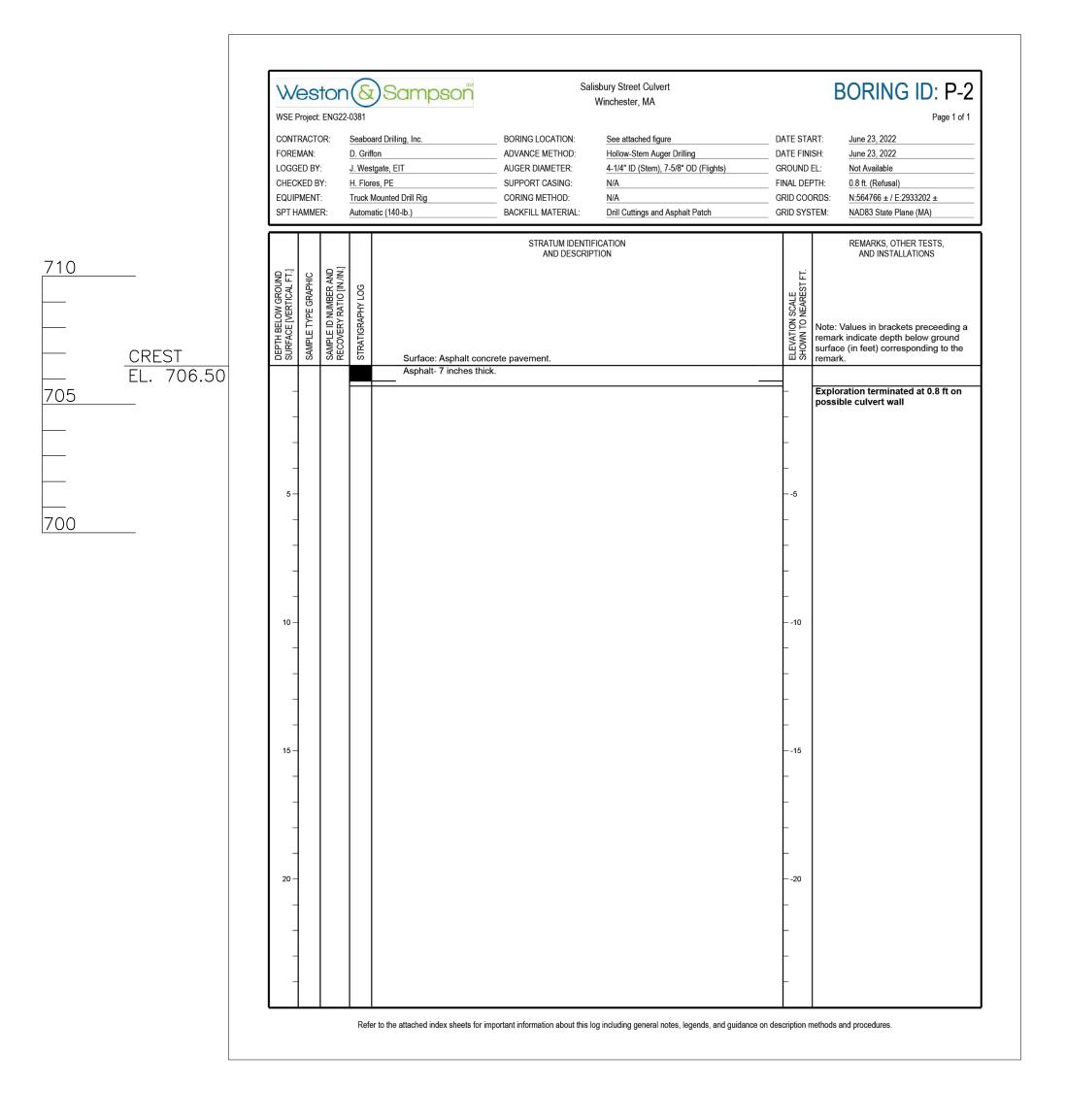
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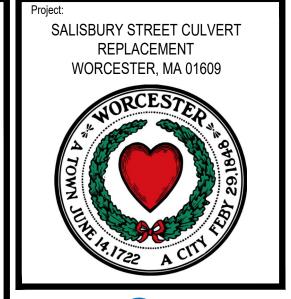
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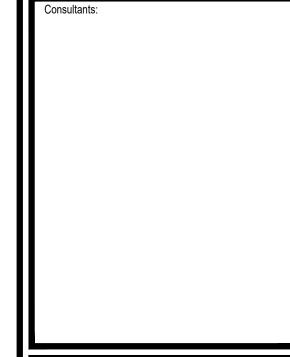




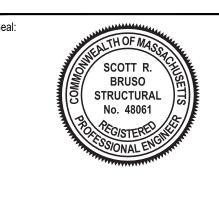
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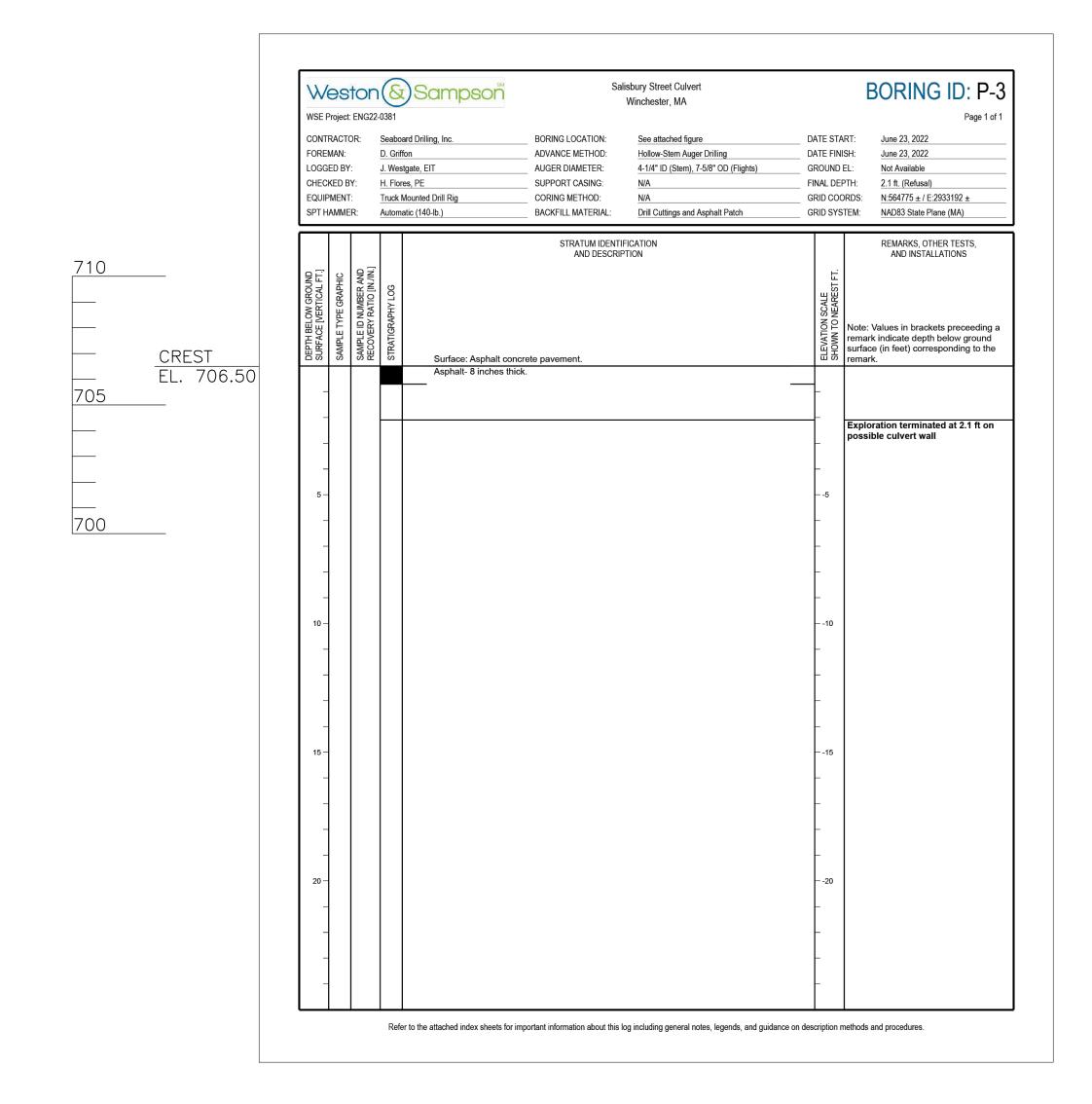
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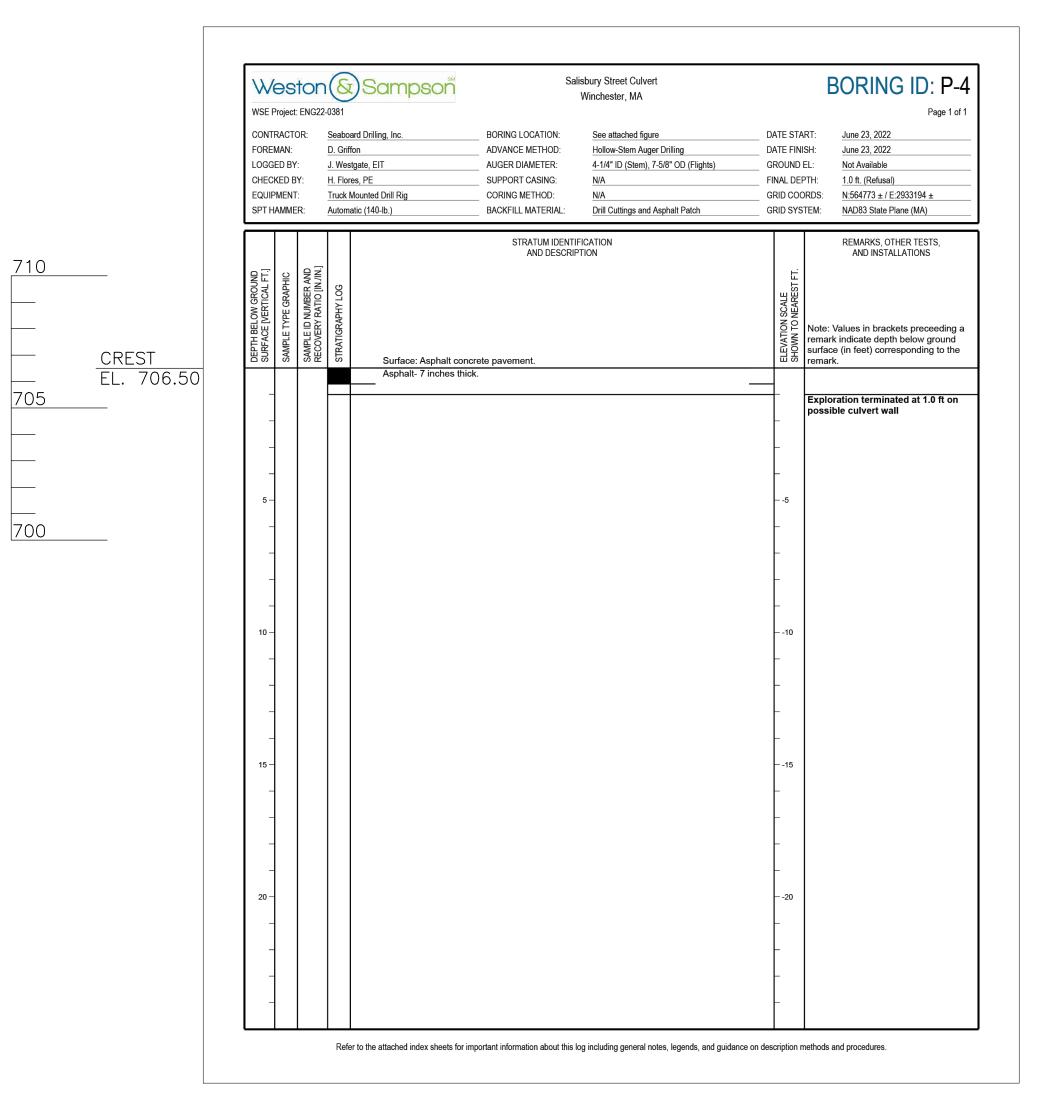
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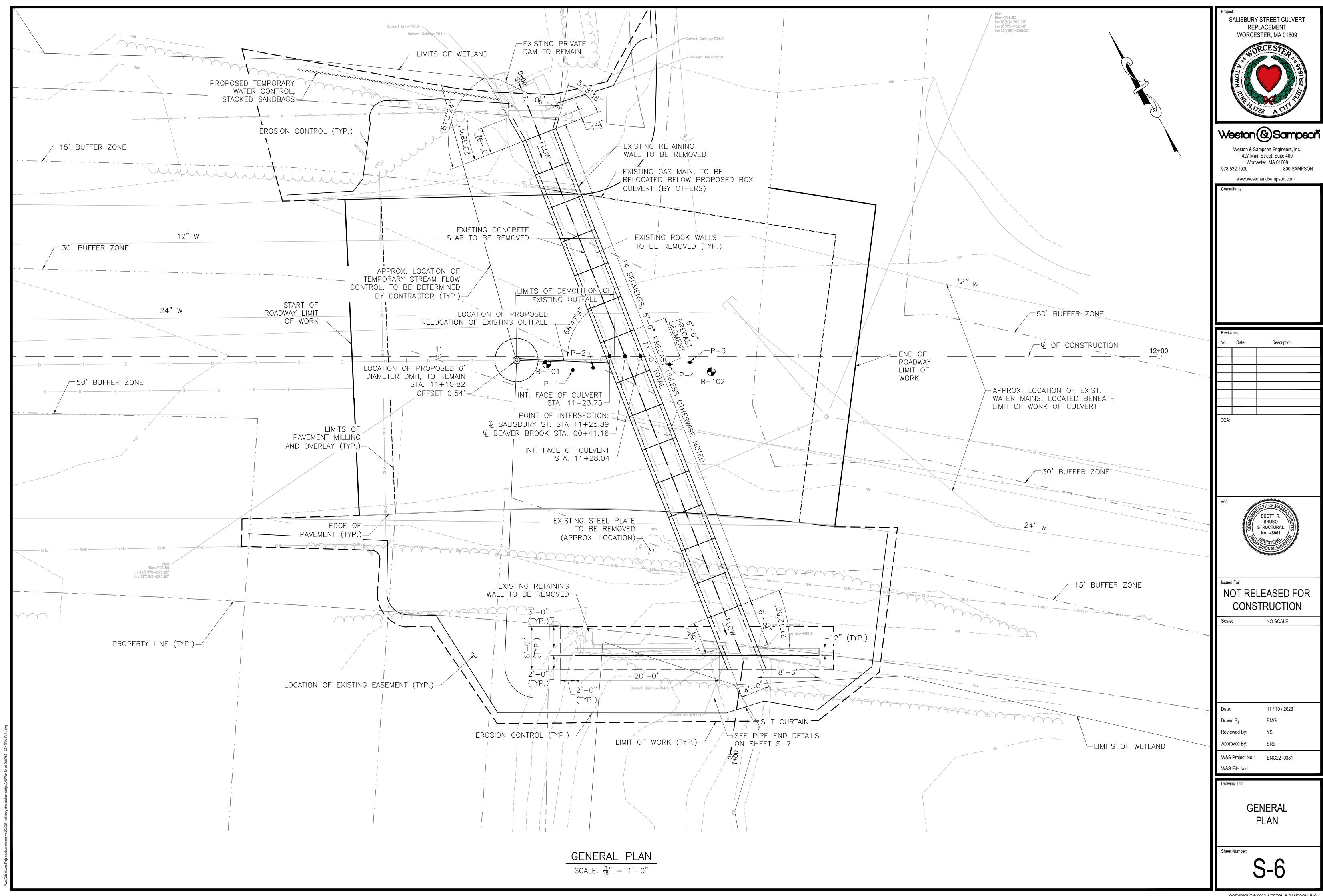
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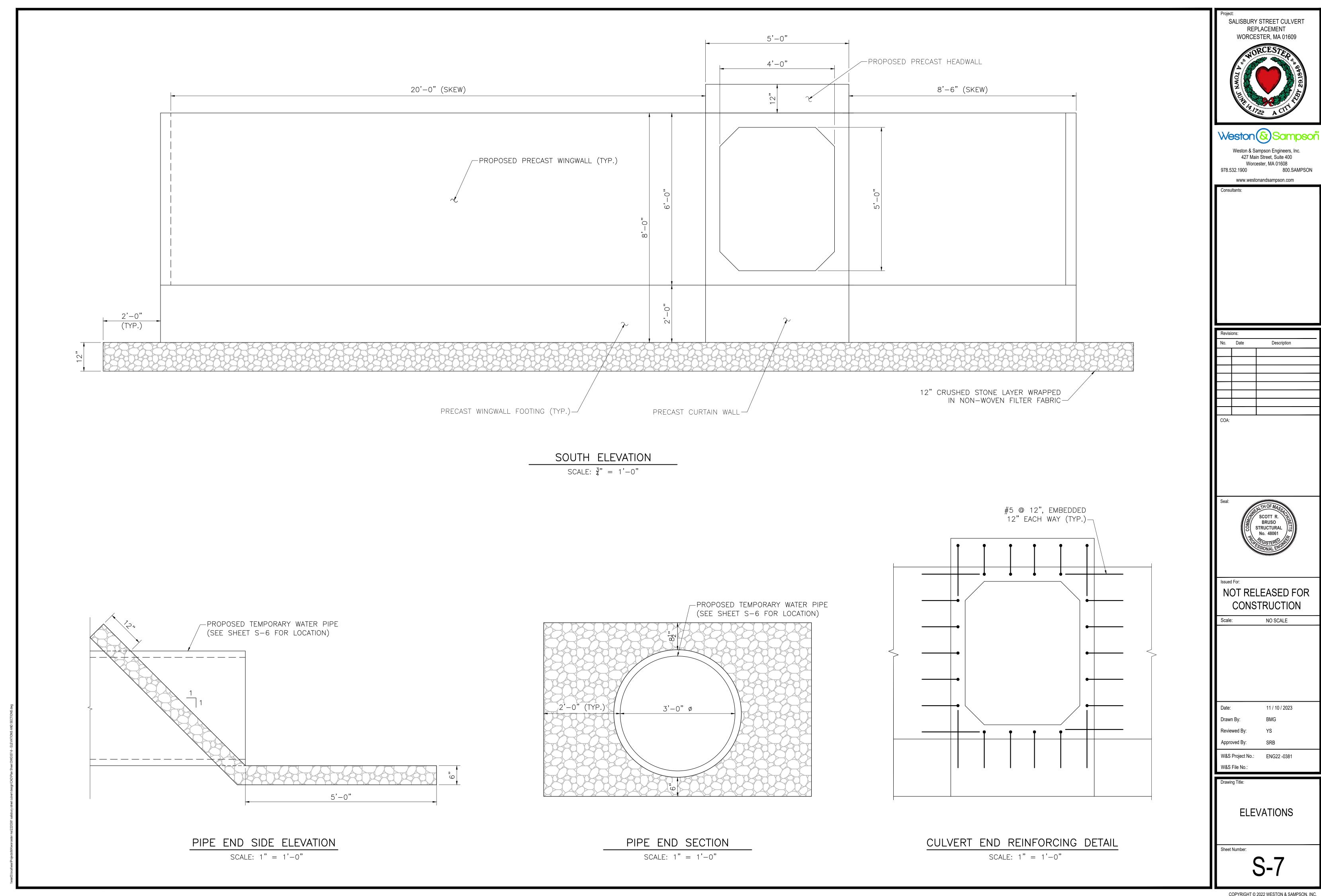
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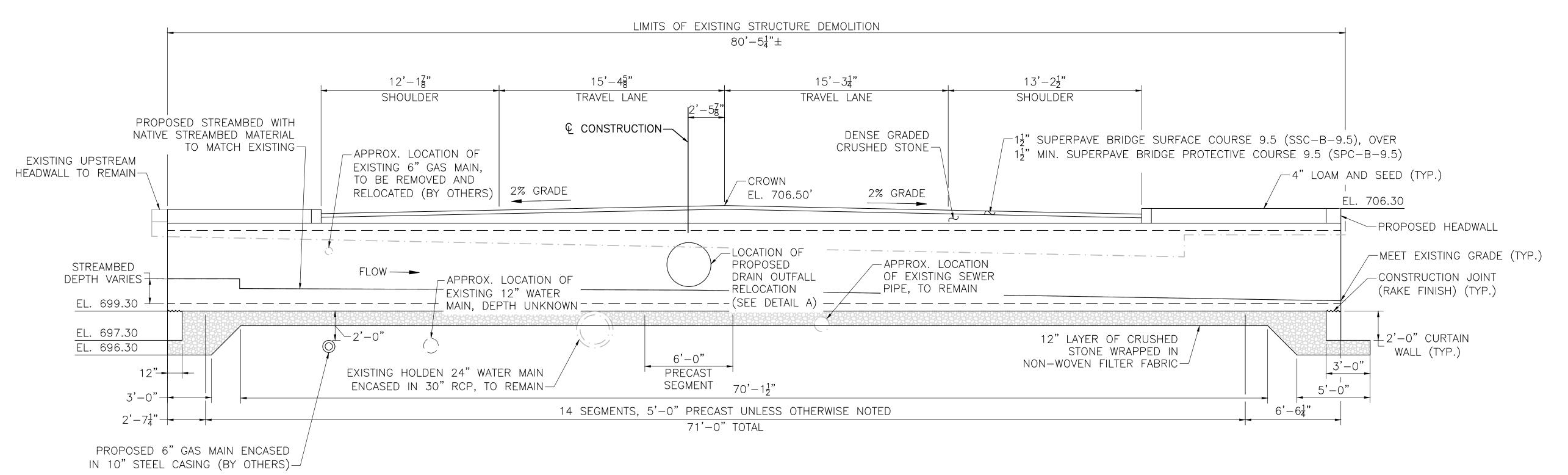






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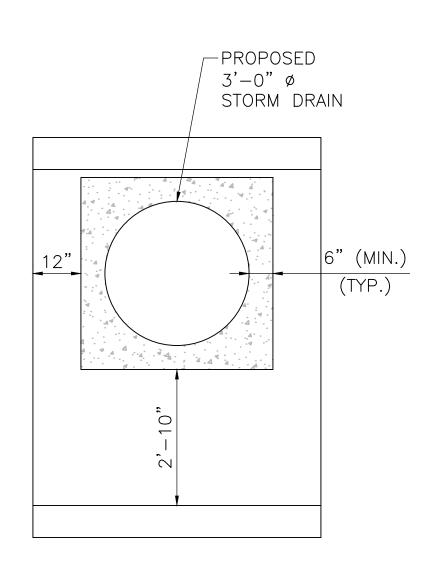


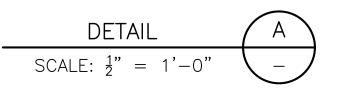
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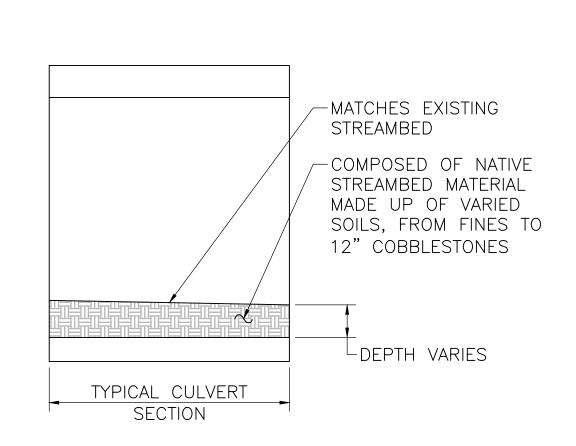
TRAVEL LANE AND SHOULDER WIDTH DIMENSIONS ARE TAKEN AT THE & OF PROPOSED CULVERT. DIMENSIONS VARY, REFER TO HIGHWAY DRAWINGS.

LONGITUDINAL SECTION

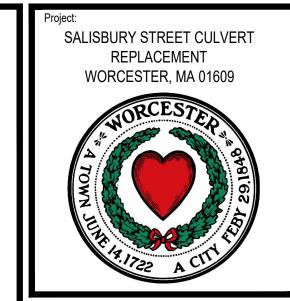
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STREAMBED	DETAIL
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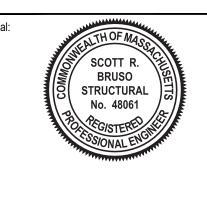


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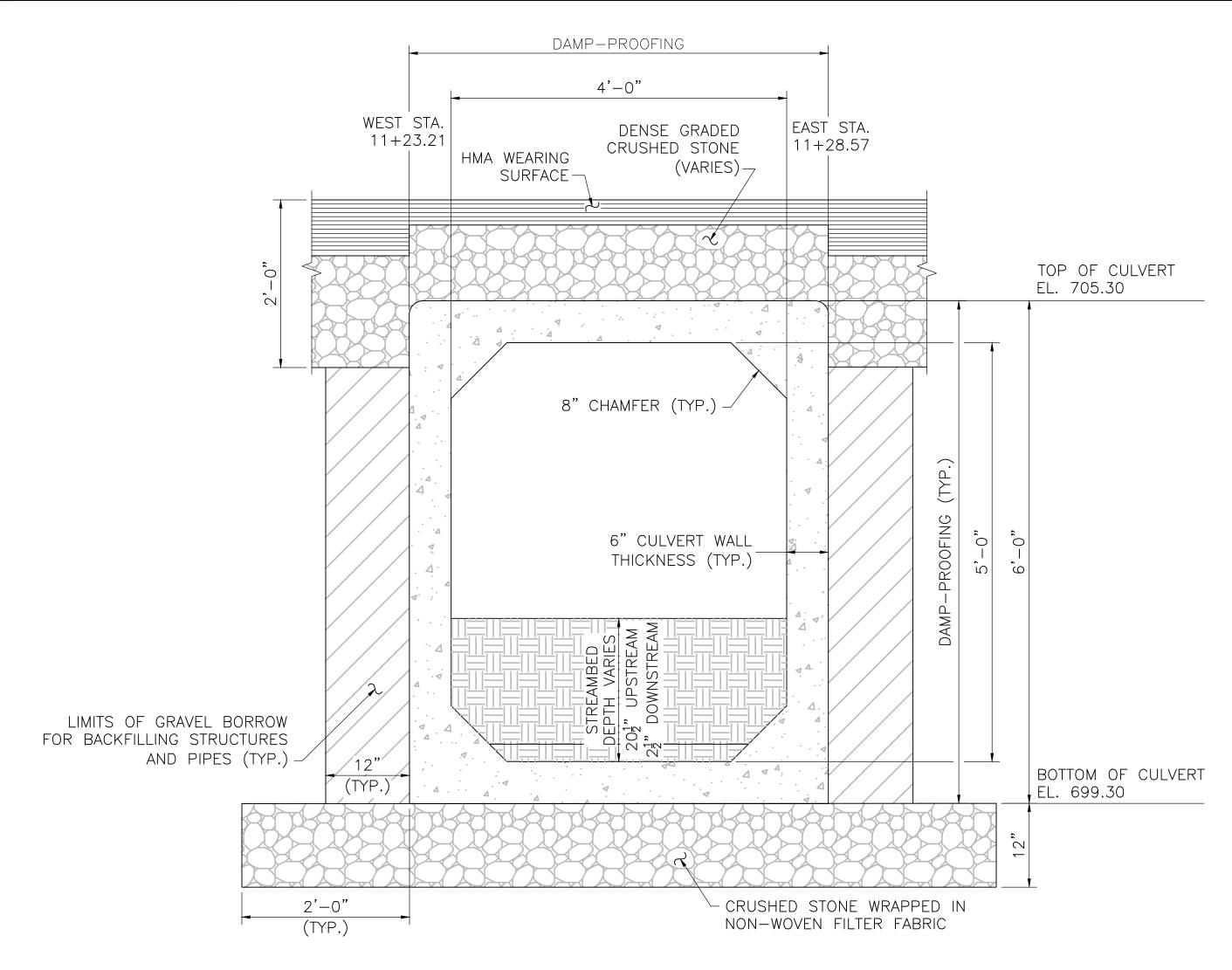
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LONGITUDINAL SECTION

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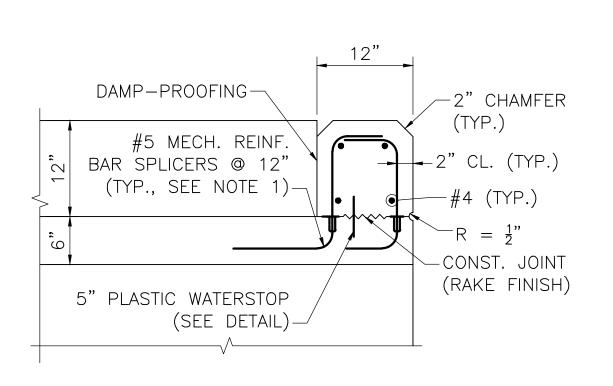
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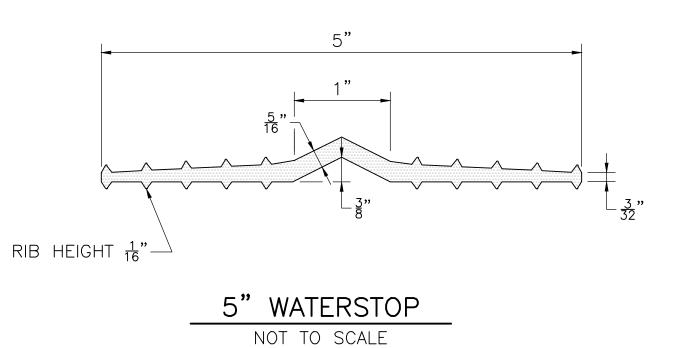




PRECAST CULVERT SECTION FABRICATION AND ERECTION TOLERANCES SHALL BE  $\pm \frac{1}{4}$ ".

# CULVERT CROSS SECTION SCALE: 1" = 1'-0"



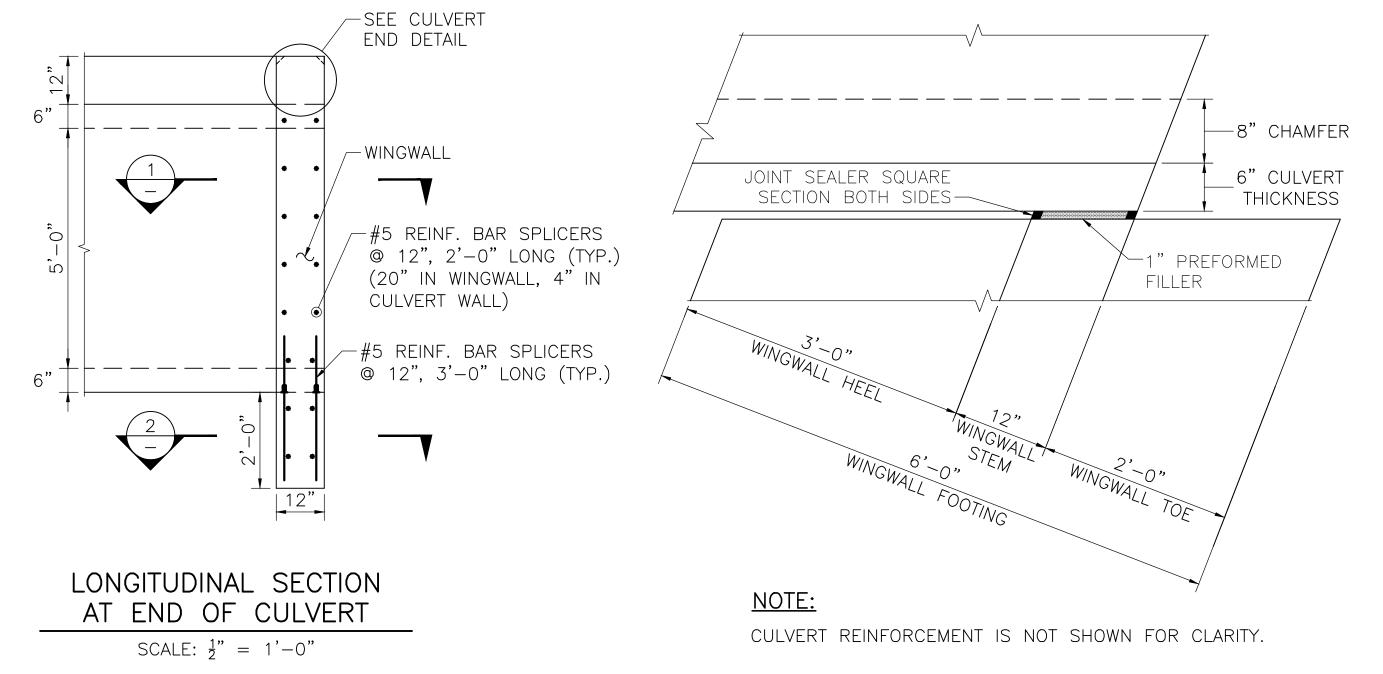


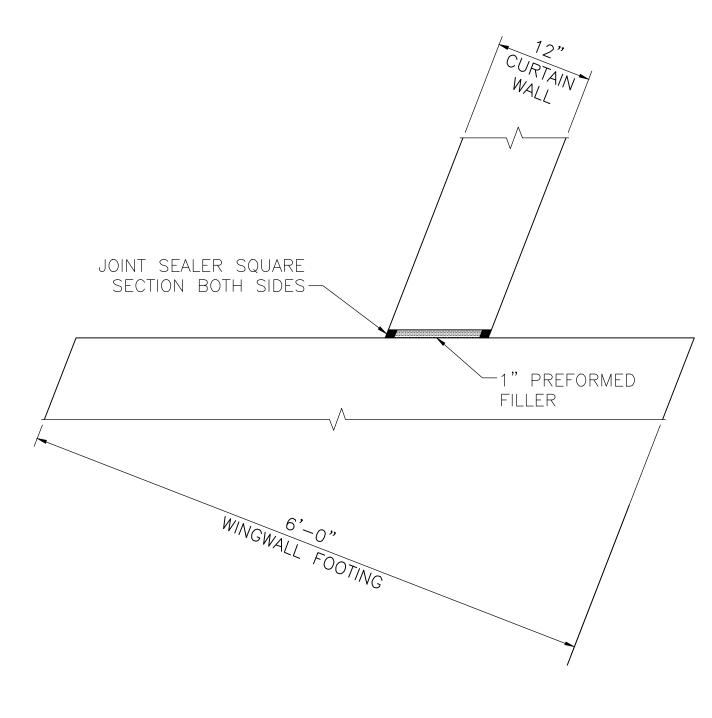
# NOTES:

- THE CONTRACTOR MAY SUBSTITUTE #5 ∫ DOWELS, FOR MECHANICAL REINFORCING BAR SPLICERS AND THREADED REBARS.
- 2. CULVERT REINFORCEMENT IS NOT SHOWN FOR CLARITY.

CULVERT END DETAIL

SCALE: 1" = 1'-0"





SECTION

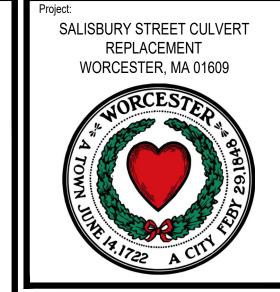
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NOTE:

CULVERT REINFORCEMENT IS NOT SHOWN FOR CLARITY.

SECTION 2

SCALE: 1" = 1'-0" -



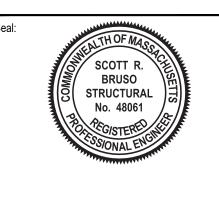
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Drawn By: BMG

Reviewed By: YS

Approved By: SRB

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W&S File No.:

Drawing Title

Drawing Title:

CULVERT & WINGWALL DETAILS

Sheet Number:

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### **WORK-START NOTIFICATION FORM**

(Minimum Notice: Two weeks before work begins)

******	***************	**********
EMAIL TO:	Maninder.Singh@usace.army.mil and cenae-r@u	sace.army.mil; or
MAIL TO:	Maninder Singh Regulatory Division U.S. Army Corps of Engineers, New England Dis 696 Virginia Road Concord, Massachusetts 01742-2751	
Corps of Englocated in Ur Worcester, I permanently the purposes Associated w repairs, and r square feet) a culvert will b conditions fo 355 square fee Sandbags wil will be instal	ineers Permit No. NAE-2024-00219 was issued to mamed tributary between 646 Salisbury Street: Massachusetts 01609 at site coordinates 42.29652 impact 355 square feet of stream below the Ordinates of permanently impacting 355 square feet for the proof will include in-kind replacement of another extelocation of utilities. The replaced culvert will be and 6 feet tall with 2 feet buried into the substrate feet 4-sided instead of 3-sided to protect the utilities or in-stream work will be met by diverting the flow the will also be coffer dammed to provide dry conditional decimal dec	David Harris. This work is and 655 Salisbury Street, 23, -71.838007 and authorized to ry High Water (OHW) line for purposes of replacing a culvert. isting 36-inch storm drain, road 71 feet long, 5 feet wide (355 or an opening of 4 feet. The underneath the stream. Dry via a 3 feet storm drainpipe. The itions for the construction phase. in dry conditions. Silt curtains
PLEASE PR	RINT OR TYPE	
Name of Per	son/Firm:	
<b>Business Ad</b>	dress:	
Phone & em	ail: ( <u>)</u> ( <u>)</u>	
Proposed W	ork Dates: Start:	Finish:
Permittee/A	gent Signature:	Date:
Printed Nan	ne:	Title:
	Issued: Date Permit Ex	

### FOR USE BY THE CORPS OF ENGINEERS

PM:	Submittals Required:	
<b>Inspection Recommendation:</b>		



Telephone Number

### **COMPLIANCE CERTIFICATION FORM**

(Minimum Notice: Permittee must sign and return notification within one month of the completion of work.)

Telephone Number

Permit Number: NAE-2024-00219	
Project Manager: Maninder Singh	
Name of Permittee: <u>David Harris</u>	
Permit Issuance Date: April 4, 2024	
Please sign this certification and return it to	our office upon completion of the activity.
************	*************
* E-MAIL TO: cenae-r-ma@usace.army.	
*  * MAIL TO: Massachusetts Section	*
* Regulatory Division	*
•	eers, New England District *
* 696 Virginia Road	*
* Concord, MA 01742-2751	* ********************
Please note that your permitted activity is su Army Corps of Engineers representative. If y subject to permit suspension, modification, of	you fail to comply with this permit you are
I hereby certify that the work authorized I completed in accordance with the terms a permit, and any required mitigation was a conditions.	and conditions of the above referenced
Signature of Permittee	Date
Printed Name	Date of Work Completion

### **SECTION 01014**

### SCOPE AND SEQUENCE OF WORK

### PART 1 – GENERAL

### 1.01 WORK INCLUDED:

- A. Demolition of the existing culvert structure and installation of precast concrete box culvert and wingwalls.
- B. Installation of water main beneath the proposed culvert.
- C. Installation of gas main beneath the proposed culvert. Coordination with Eversource will be required.
- D. Installation of new section of sewer main beneath the proposed culvert.
- E. Temporary support of excavation for the demolition of the existing culvert and installation of the proposed structure.
- F. Temporary water control structure including the installation of a temporary diversion pipe.
- G. Installation of two catch basins and drainage connections to the proposed box culvert.
- H. Staged construction practices implementing a temporary traffic signal and controls.

### <u>PART 2 - PRODUCTS</u> (NOT APPLICABLE)

### PART 3 - EXECUTION

#### 3.01 GENERAL:

A. The Contractor shall be responsible for scheduling its activities and the activities of any subcontractors involved, to meet the completion date, or milestones, established for the contract. Scheduling of the work shall be coordinated with the Owner and Engineer.

B. The Construction Sequence Requirements shall be used by the Contractor to form a complete schedule for the project, which shall be coordinated with the Owner and Engineer. Prior to performing any work at the site, the Contractor shall submit a detailed plan to the Engineer for review. The plan shall describe the proposed sequence, methods, and timing of the work.

### 3.02 CONSTRUCTION SEQUENCING REQUIREMENTS:

- A. Eversource Gas Main Work Coordination
- 1. Contractor shall provide an allowance in the project schedule for Eversource to perform work at the project site for the temporary bypass of the gas main and the installation and connection of the permanent gas main. The schedule allowances shall be as follows:
- a. 2 weeks (14 calendar days) for Eversource to install the temporary gas main bypass.
- b. 2 weeks (14 calendar days) for Eversource to install the permanent gas main.
- 2. The Contractor will be responsible for excavating and installing the proposed permanent gas main section below the proposed culvert as indicated on the Drawings. Eversource will furnish the gas main piece to be installed under the culvert. Eversource shall have a representative on site during the installation of the gas main section below the proposed culvert.
- 3. The Contractor shall be responsible for coordinating all of the gas main work with Eversource.

END OF SECTION

### **SECTION 01250**

### PRICE ADJUSTMENTS

### PART 1 - GENERAL

### 1.01 WORK INCLUDED:

A. Price adjustments, as required by MGL Chapter 30, Section 38A, shall be implemented for this Project. Price adjustments, as enumerated in Part 3 of this specification, shall be made for the following items:

### Water and Sewer Projects

- Diesel fuel and gasoline
- Liquid asphalt
- Portland cement contained in cast-in-place concrete

### Road and Bridge Projects

- Diesel fuel and gasoline
- Asphalt
- Concrete
- Steel
- B. Price adjustments shall be made in accordance with the methodology adopted by the Massachusetts Department of Transportation in the following SPECIAL PROVISIONS documents, which are attached, but modified as contained herein:
  - 1. Document 00811 Monthly Price Adjustment for Hot Mix Asphalt Mixtures, revised July 8, 2016
  - 2. Document 00812 Monthly Price Adjustment for Diesel fuel and Gasoline, revised January 26, 2009
  - 3. Document 00813 Price Adjustments for Structural Steel and Reinforcing Steel, dated March 16,2023
  - 4. Document 00814 Price Adjustments for Portland Cement concrete Mixes, dated January 12, 2009
- C. Base and Period Prices used to calculate price adjustments shall be as published by the Massachusetts Department of Transportation as presented in Documents 00811 through 00814.

### CONTRACTOR CREDIT TO OWNER SHOULD PRICES DECREASE:

- A. Price adjustments will only be made if the variance between the base price and the period price is Five Percent (5%) or more.
- B. In the instance where the period price is below the base price by 5% or more, then the Contractor shall credit the Owner the adjustment.

### PART 2 - PRODUCTS

Not used.

### **PART 3 - EXECUTION**

### 3.01 DIESEL FUEL AND GASOLINE:

- A. Price adjustments shall be determined based on documented quantities of diesel fuel and gasoline usage for site dedicated equipment. This methodology shall replace the price adjustment basis on fuel usage factors, as described within the Massachusetts Department of Transportation Document 00812.
- B. All site dedicated equipment shall be approved by the Engineer for the calculation of any qualifying price adjustment. Prior to the start of work the Contractor shall submit to the Engineer a list of all dedicated equipment for the project. The Contractor shall forward updated submittals, as necessary, throughout the duration of the contract. Only that equipment included within the current approved list shall be considered eligible for calculating a price adjustment under this Section 01250.
- C. The Contractor shall submit fuel delivery slips to the Engineer as a basis for calculating total diesel fuel and gasoline usage for site dedicated equipment. At a minimum, the delivery slips will include the name of the fuel delivery company, the date and location of fueling, the type of fuel, description of the fueled equipment and the quantity for each type of fuel delivered in gallons. Any slips not providing the minimum information shall not be included in the calculation of total diesel fuel and gasoline usage for price adjustment purposes.

### 3.02 LIQUID ASPHALT:

- A. The "Period Price Method" shall be used to determine price adjustments. For projects utilizing reclaimed asphalt include Reclaimed Asphalt Pavement (RAP) Factor (0.0 to <1.0) in calculation of the total price adjustment. Otherwise, use RAP Factor = 1.0.
- B. For bid items involving asphalt paving that are measured and paid on a linear foot basis, or some other basis besides tonnage, the number of tons shall be determined by the Engineer using compacted measure of thickness within the established payment limits.

C. Asphalt paving not separately measured for payment but rather included as an incidental component of work under a related bid item shall not be considered for price adjustment.

### 3.03 STRUCTURAL AND REINFORCING STEEL:

- A. Steel price adjustments shall not be made for water and sewer projects.
- B. Period prices for steel are subject to change up to four (4) months after the date of original publication. Therefore, no price adjustment will be made until the index for the period is finalized.

### 3.04 PORTLAND CEMENT AND CONCRETE:

- A. The price adjustment applies to all projects contained herein in Section 1.01A.
- B. Field Concrete used in water and sewer projects, typically used for thrust blocks and concrete encasement, shall not be considered for price adjustment. Cast-in-place concrete used on these projects will be included in the price adjustment determination.

END OF SECTION

### ATTACHMENT FOR SECTION 01250 PRICE ADJUSTMENTS

### MASSDOT DOCUMENTS 00811-00814

### DOCUMENT 00811 SPECIAL PROVISIONS

# MONTHLY PRICE ADJUSTMENT FOR HOT MIX ASPHALT (HMA) MIXTURES ENGLISH AND METRIC UNITS

Revised: 07/08/2016

This provision applies to all projects using greater than 100 tons (91 megagrams) of hot mix asphalt (HMA) mixtures containing liquid asphalt cement as stipulated in the Notice to Contractors section of the bid documents.

Price Adjustments will be based on the variance in price, for the liquid asphalt component only, between the Base Price and the Period Price. They shall not include transportation or other charges. Price Adjustments will occur on a monthly basis.

### **Base Price**

The Base Price of liquid asphalt on a project as listed in the Notice to Contractors section of the bid documents is a fixed price determined by the Department at the time of the bid using the same method as the determination of the Period Price detailed below. The Base Price shall be used in all bids.

#### **Period Price**

The Period Price is the price of liquid asphalt for each monthly period as determined by the Department using the average selling price per standard ton of PG64-28 paving grade (primary binder classification) asphalt, FOB manufacturer's terminal, as listed under the "East Coast Market - New England, Boston, Massachusetts area" section of the Poten & Partners, Inc. "Asphalt Weekly Monitor". This average selling price is listed in the issue having a publication date of the second Friday of the month and will be posted as the Period Price for that month. The Department will post this Period Price on its website at http://www.mhd.state.ma.us/ within two (2) business days following its receipt of the relevant issue of the "Asphalt Weekly Monitor". Poten and Partners has granted the Department the right to publish this specific asphalt price information sourced from the Asphalt Weekly Monitor. This method of period price determination was formerly called the New Asphalt Period Price Method. Separate website postings using both the New Asphalt Period Price Method and the Old Asphalt Period Price Method were discontinued after June 2013.

### Price Adjustment Determination, Calculation and Payment

The Contract Price of the HMA mixture will be paid under the respective item in the Contract. Price Adjustments, as herein provided, either 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.

Price Adjustments will be paid only if the variance from the Base Price is 5% or more for a monthly period. The complete adjustment will be paid in all cases with no deduction of the 5% from either upward or downward adjustments.

The Price Adjustment applies only to the actual virgin liquid asphalt content in the mixture placed on the job in accordance with the Standard Specifications for Highways and Bridges, Division III, Section M3.11.03.

Price Adjustments will be separate payment items. The pay item numbers are 999.401 for a positive price adjustment (a payment) and 999.402 for a negative price adjustment (a deduction). Price Adjustments will be calculated using the following equation:

Price Adjustment = Tons of HMA Placed X Liquid Asphalt Content % X RAP Factor X (Period Price - Base Price)

No Price Adjustment will be allowed beyond the Completion Date of this Contract, unless there is a Department-approved extension of time.

\*\*\*\*\*\* END OF DOCUMENT \*\*\*\*\*\*

### DOCUMENT 00812

# SPECIAL PROVISIONS MONTHLY PRICE ADJUSTMENT FOR DIESEL FUEL AND GASOLINE – ENGLISH UNITS

Revised: 01/26/2009

This monthly fuel price adjustment is inserted in this contract because the national and worldwide energy situation has made the future cost of fuel unpredictable. This adjustment will provide for either additional compensation to the Contractor or repayment to the Commonwealth, depending on an increase or decrease in the average price of diesel fuel or gasoline.

This adjustment will be based on fuel usage factors for various items of work developed by the Highway Research Board in Circular 158, dated July 1974. These factors will be multiplied by the quantities of work done in each item during each monthly period and further multiplied by the variance in price from the Base Price to the Period Price.

The Base Price of Diesel Fuel and Gasoline will be the price as indicated in the Department's web site (www.mhd.state.ma.us) for the month in which the contract was bid, which includes State Tax.

The Period Price will be the average of prices charged to the State, including State Tax for the bulk purchases made during each month.

This adjustment will be effected only if the variance from the Base Price is 5% or more for a monthly period. The complete adjustment will be paid in all cases with no deduction of the 5% from either upward or downward adjustments.

No adjustment will be paid for work done beyond the extended completion date of any contract.

Any adjustment (increase or decrease) to estimated quantities made to each item at the time of final payment will have the fuel price adjustment figured at the average period price for the entire term of the project for the difference of quantity.

The fuel price adjustment will apply only to the following items of work at the fuel factors shown:

ITEMS COVERED	FUEL FACTORS	
	Diesel	Gasoline
Excavation: and Borrow Work: Items 120, 120.1, 121, 123, 124, 125, 127, 129.3, 140, 140.1, 141, 142, 143, 144., 150, 150.1, 151 and 151.1 (Both Factors used)	0.29 Gallons / CY.	0.15 Gallons / CY
Surfacing Work: All Items containing Hot Mix Asphalt	2.90 Gallons / Ton	Does Not Apply

\*\*\*\*\* END OF DOCUMENT \*\*\*\*\*\*

### DOCUMENT 00813

### SPECIAL PROVISIONS

#### PRICE ADJUSTMENTS FOR STRUCTURAL STEEL AND REINFORCING STEEL

March 16, 2023

This special provision applies to all projects containing the use of structural steel and/or reinforcing steel as specified elsewhere in the Contract work. It applies to all structural steel and all reinforcing steel, as defined below, on the project. Compliance with this provision is mandatory, i.e., there are no "opt-in" or "opt-out" clauses. Price adjustments will be handled as described below and shall only apply to unfabricated reinforcing steel bars and unfabricated structural steel material, consisting of rolled shapes, plate steel, sheet piling, pipe piles, steel castings and steel forgings.

Price adjustments will be variances between Base Prices and Period Prices. Base Prices and Period Prices are defined below.

Price adjustments will only be made if the variances between Base Prices and Period Prices are 5% or more. A variance can result in the Period Price being either higher or lower than the Base Price. Once the 5% threshold has been achieved, the adjustment will apply to the full variance between the Base Price and the Period Price.

Price adjustments will be calculated by multiplying the number of pounds of unfabricated structural steel material or unfabricated reinforcing steel bars on a project by the index factor calculated as shown below under <u>Example of a Period Price Calculation</u>.

Price adjustments will <u>not</u> include guardrail panels or the costs of shop drawing preparation, handling, fabrication, coatings, transportation, storage, installation, profit, overhead, fuel costs, fuel surcharges, or other such charges not related to the cost of the unfabricated structural steel and unfabricated reinforcing steel.

The weight of steel subject to a price adjustment shall not exceed the final shipping weight of the fabricated part by more than 10%.

### Base Prices and Period Prices are defined as follows:

<u>Base Prices</u> of unfabricated structural steel and unfabricated reinforcing steel on a project are fixed prices determined by the Department and found in the table below. While it is the intention of the Department to make this table comprehensive, some of a project's unfabricated structural steel and/or unfabricated reinforcing steel may be inadvertently omitted. Should this occur, the Contractor shall bring the omission to the Department's attention so that a contract alteration may be processed that adds the missing steel to the table and its price adjustments to the Contract.

The Base Price Date is the month and year of the most recent finalized period price index at the time that MassDOT opened bids for the project. The Base Price Index for this contract is the Steel PPI listed in the Notice to Contractors.

<u>Period Prices</u> of unfabricated structural steel and unfabricated reinforcing steel on a project are variable prices that have been calculated using the Period Price Date and an index of steel prices to adjust the Base Price.

The Period Price Date is the date the steel was delivered to the fabricator as evidenced by an official bill of lading submitted to the Department containing a description of the shipped materials, weights of the shipped materials and the date of shipment. This date is used to select the Period Price Index.

The index used for the calculation of Period Prices is the U.S. Department of Labor Bureau of Labor Statistics Producer Price Index (PPI) Series ID WPU101702 (Not Seasonally Adjusted, Group: Metals and Metal Products, Item: Semi-finished Steel Mill Products.) As this index is subject to revision for a period of up to four (4) months after its original publication, no price adjustments will be made until the index for the period is finalized, i.e., the index is no longer suffixed with a "(P)".



### Period Prices are determined as follows:

Period Price = Base Price X Index Factor Index Factor = Period Price Index / Base Price Index

#### Example of a Period Price Calculation:

Calculate the Period Price for December 2009 using a Base Price from March 2009 of \$0.82/Pound for 1,000 Pounds of ASTM A709 (AASHTO M270) Grade A36 Structural Steel Plate.

The Period Price Date is December 2009. From the PPI website\*, the Period Price Index = 218.0.

The Base Price Date is March 2009. From the PPI website\*, the Base Price Index = 229.4.

Index Factor = Period Price Index / Base Price Index = 218.0 / 229.4 = 0.950 Period Price = Base Price X Index Factor = \$0.82/Pound X 0.950 = \$0.78/Pound

Since \$0.82 - \$0.78 = \$0.04 is less than 5% of \$0.82, no price adjustment is required.

If the \$0.04 difference shown above was greater than 5% of the Base Price, then the price adjustment would be 1,000 Pounds X \$0.04/Pound = \$40.00. Since the Period Price of \$0.78/Pound is less than the Base Price of \$0.82/Pound, indicating a drop in the price of steel between the bid and the delivery of material, a credit of \$40.00 would be owed to MassDOT. When the Period Price is higher than the Base Price, the price adjustment is owed to the Contractor.

\* To access the PPI website and obtain a Base Price Index or a Period Price Index, go to <a href="http://data.bls.gov/cgi-bin/srgate">http://data.bls.gov/cgi-bin/srgate</a>

#### End of example.

The Contractor will be paid for unfabricated structural steel and unfabricated reinforcing steel under the respective contract pay items for all components constructed of either structural steel or reinforced Portland cement concrete under their respective Contract Pay Items.

Price adjustments, as herein provided for, will be paid separately as follows:

# Structural Steel

Pay Item Number 999.449 for positive (+) pay adjustments (payments to the Contractor)

Pay Item Number 999.457 for negative (-) pay adjustments (credits to MassDOT Highway Division)

#### Reinforcing Steel

Pay Item Number 999.466 for positive (+) pay adjustments (payments to the Contractor)

Pay Item Number 999.467 for negative (-) pay adjustments (credits to MassDOT Highway Division)

No price adjustment will be made for price changes after the Contract Completion Date, unless the MassDOT Highway Division has approved an extension of Contract Time for the Contract.



# **BASE PRICES**

The Department's table of Base Prices specified above is updated monthly. The current table is attached to this Document 00813 and included in each new contract.

#### DOCUMENT 00814

# SPECIAL PROVISIONS PRICE ADJUSTMENT FOR PORTLAND CEMENT CONCRETE MIXES

January 12, 2009

This provision applies to all projects using greater than 100 Cubic Yards (76 Cubic Meters) of Portland cement concrete containing Portland cement as stipulated in the Notice to Contractors section of the Bid Documents. This Price Adjustment will occur on a monthly basis.

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.

The Base Price of Portland cement on a project is a fixed price determined at the time of bid by the Department by using the same method as for the determination of the Period Price (see below) and found in the Notice to Contractors.

The Period Price of Portland cement will be determined by using the latest published price, in dollars per ton (U.S.), for Portland cement (Type I) quoted for Boston, U.S.A. in the **Construction Economics** section of *ENR Engineering News-Record* magazine or at the ENR website http://www.enr.com under **Construction Economics**. The Period Price will be posted on the MassHighway website the Wednesday immediately following the publishing of the monthly price in ENR, which is normally the first week of the month.

The Contract Price of the Portland cement concrete mix will be paid under the respective item 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 applies only to the actual Portland cement content in the mix placed on the job in accordance with the Standard Specifications for Highways and Bridges, Division III, Section M4.02.01. No adjustments will be made for any cement replacement materials such as fly ash or ground granulated blast furnace slag.

The Price Adjustment will be a separate payment item. 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 only if the variance from the Base Price is 5% or more for a monthly period. The complete adjustment will be paid in all cases with no deduction of the 5% from either upward or downward adjustments.

No Price Adjustment will be allowed beyond the Completion Date of this Contract, unless there is a Department-approved extension of time.

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

END OF DOCUMENT

#### **SUBMITTALS**

#### PART 1 - GENERAL

#### 1.01 WORK INCLUDED:

A. The Contractor shall provide the Engineer with submittals as required by the contract documents.

# 1.02 RELATED WORK:

A. Divisions 1-2 of these specifications that require submittals.

# PART 2 - PRODUCTS

NOT USED

# PART 3 - EXECUTION

# 3.01 GENERAL:

- A. As required by the General Conditions, Contractor shall submit a schedule of shop and working drawing submittals.
- B. The Contractor shall submit the shop and working drawing submittals either electronically or hard copy.

# 3.02 ELECTRONIC SUBMITTALS:

A. In accordance with the accepted schedule, the Contractor shall submit promptly to the Engineer by email (Mahoney.Carolyn@wseinc.com) or on Compact Disc (mail to Weston & Sampson Engineers, attention: CSD), one electronic copy in Portable Document Format (PDF) of shop or working drawings required as noted in the specifications, of equipment, structural details and materials fabricated especially for this Contract.

- B. Each electronic copy of the shop or working drawing shall be accompanied by the Engineer's standard shop drawing transmittal form, included as Exhibit 1 of this section (use only for electronic submittals), on which is a list of the drawings, descriptions and numbers and the names of the Owner, Project, Contractor and building, equipment or structure.
- C. The Contractor shall receive a shop drawing memorandum with the Engineer's approval or comments via email.

# 3.03 HARD COPY SUBMITTALS:

- A. In accordance with the accepted schedule, the Contractor shall submit promptly to the Engineer, by mail (to Weston & Sampson Engineers, attention: CSD), six (6) copies each of shop or working drawings required as noted in the specifications, of equipment, structural details and materials fabricated especially for this Contract.
- B. Each shipment of drawings shall be accompanied by the Engineer's (if applicable) standard shop drawing transmittal form on which is a list of the drawings, descriptions and numbers and the names of the Owner, Project, Contractor and building, equipment or structure.

#### 3.04 SHOP AND WORKING DRAWINGS:

- A. Shop and working drawings shall show the principal dimensions, weight, structural and operating features, space required, clearances, type and/or brand of finish of shop coat, grease fittings, etc., depending on the subject of the drawings. When it is customary to do so, when the dimensions are of particular importance, or when so specified, the drawings shall be certified by the manufacturer or fabricator as correct for this Contract.
- B. All shop and working drawings shall be submitted to the Engineer by and/or through the Contractor, who shall be responsible for obtaining shop and working drawings from its subcontractors and returning reviewed drawings to them. All shop and working drawings shall be prepared on standard size, 24-inch by 36-inch sheets, except those, which are made by changing existing standard shop or working drawings. All drawings shall be clearly marked with the names of the Owner, Project, Contractor and building, equipment or structure to which the drawing applies, and shall be suitably numbered. Each shipment of drawings shall be accompanied by the Engineer's (if applicable) standard shop drawing transmittal form on which is a list of the drawings, descriptions and numbers and the names mentioned above.

- C. Only drawings that have been prepared, checked and corrected by the fabricator should be submitted to the Contractor by its subcontractors and vendors. Prior to submitting drawings to the Engineer, the Contractor shall check thoroughly all such drawings to satisfy himself that the subject matter thereof conforms to the Contract Documents in all respects. Shop drawings shall be reviewed and marked with the date, checker's name and indication of the Contractor's approval, and only then shall be submitted to the Engineer. Shop drawings unsatisfactory to the Contractor shall be returned directly to their source for correction, without submittal to the Engineer. Shop drawings submitted to the Engineer without the Contractor's approval stamp and signature will be rejected. Any deviation from the Contract Documents indicated on the shop drawings must be identified on the drawings and in a separate submittal to the Engineer, as required in this section of the specifications and General Conditions.
- D. The Contractor shall be responsible for the prompt submittal and resubmittal, as necessary, of all shop and working drawings so that there will be no delay in the work due to the absence of such drawings.
- The Engineer will review the shop and working drawings as to their general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. Corrections of comments made on the drawings during the review do not relieve the Contractor from compliance with requirements of the Contract Documents. The Contractor is responsible for: confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating its work with that of all other trades; and performing its work in a safe and satisfactory manner. The review of the shop drawings is general and shall not relieve the Contractor of the responsibility for details of design, dimensions, code compliance, etc., necessary for interfacing with other components, proper fitting and construction of the work required by the Contract and for achieving the specified performance. The Engineer will review submittals two times: once upon original submission and a second time if the Engineer requires a revision or corrections. The Contractor shall reimburse the Owner amounts charged to the Owner by the Engineer for performing any review of a submittal for the third time or greater.
- F. With few exceptions, shop drawings will be reviewed and returned to the Contractor within 30 days of submittal.

- G. No material or equipment shall be purchased or fabricated especially for this Contract nor shall the Contractor proceed with any portion of the work, the design and details of which are dependent upon the design and details of equipment or other features for which review is required, until the required shop and working drawings have been submitted and reviewed by the Engineer as to their general conformance and compliance with the project and its Contract Documents. All materials and work involved in the construction shall then be as represented by said drawings.
- H. Two copies of the shop and working drawings and/or catalog cuts will be returned to the Contractor. The Contractor shall furnish additional copies of such drawings or catalog cuts when it needs more than two copies or when so requested.

#### 3.05 SAMPLES:

- A. Samples specified in individual Sections include, but are not necessarily limited to, physical examples of the work such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively-used products, color/texture/pattern swatches and range sets, specimens for coordination of visual effect, graphic symbols, and units of work to be used by the Engineer or Owner for independent inspection and testing, as applicable to the work.
- B. The number of samples submitted shall be as specified. Submittal and processing of samples shall follow the procedures outlined for shop and working drawings unless the specifications call for a field submittal or mock-up.
- C. Acceptance of samples will be acknowledged via a copy of the transmittal noting status. When samples are not acceptable, prompt resubmittal will be required.

# 3.06 OPERATING AND MAINTENANCE MANUALS AND SPARE PARTS LISTS:

A. Where reference is made in technical specification sections to operating and maintenance manuals and/or spare parts lists, the Contractor shall submit four copies to the Engineer for review in accordance with the instructions furnished under "Shop and Working Drawings." If the submittal is complete and does not require any changes, an acknowledgement (copy of transmittal) will be returned noting status. If the submittal is incomplete or does require changes, corrections, additions, etc., two copies of the submittal will be returned with a copy of transmittal noting status. Four copies of the final operating and maintenance manuals and/or spare parts list shall be delivered to the Engineer prior to or with the equipment when it is delivered to the job site. For systems requiring field adjustment and balancing, such as heating and ventilating, the Contractor shall submit separate test results and adjustment data on completion of the work, to be incorporated into the system manual.

- B. The information included in the manual shall be as described in the specification sections, but as a minimum shall contain clear and concise instructions for operating, adjusting, lubricating and maintaining the equipment, an exploded assembly drawing identifying each part by number and a listing of all parts of the equipment, with part numbers and descriptions required for ordering spare parts. Spare parts lists shall include recommended quantity and price.
- C. Operating and maintenance manuals shall be in durable loose-leaf binders, on 8½-inch by 11-inch paper, with diagrams and illustrations either on 8½-inch by 11 inch or multiple foldouts. The instructions shall be annotated to indicate only the specific equipment furnished. Reference to other sizes or models of similar requirement shall be deleted or neatly lined out.

**END OF SECTION** 

# EXHIBIT 1 TO SECTION 01330 SUBMITTALS SHOP DRAWING TRANSMITTAL FORM

Shop Drawing Transmittal						Weston & Sampson					
Instruction for Preparing Transmittal  No action will be taken on any item unless accompanied by this form. TRANSMITTAL NOS. to be consecutive (1, 2, 3, etc.).  Each resubmittal of same item shall use same number with suffix letter SPEC. SECT. NO: Only one spec. section no. to each transmittal.  DESCRIPTION: Complete identification of document or group of document SOURCE: Originator of document(s) being submitted.					,	DRAWING NO: Identification of document(s). CONTRACT DRAWING REFERENCE: Contract drawing number(s) showing details of document(s). SPECIAL INSTRUCTIONS: Special cases and emergencies, changes in distribution and special handling requests, etc. should be entered here. SIGNATURE OF CONTRACTOR: Signature of individual who reviews and approves material prior to submittal to engineer.					
<del>_</del>				N TC	N TO BE COMPLETED BY CONTRACTOR						
TRANSM. NO.		SPEC. SECT. NO.	DATE	CO	CONTRACTORS JOB NO. W&S JO			OB NO.			
PROJECT NAME & CONTRACT NO.			LOCATION								
Attention: CSD ( <u>Mahoney.Carolyn@wseinc.com</u> ) Weston & Sampson Engineers, Inc. 55 Walkers Brook Drive Reading, MA 01867			F R O M	R O							
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#### HEALTH AND SAFETY PLAN

#### PART 1 - GENERAL

#### 1.01 WORK INCLUDED:

A. Prior to the start of work on the site, Contractor shall prepare and submit a site-specific health and safety plan in accordance with paragraph 1.04 below.

# 1.02 REFERENCES:

A. OSHA 29 CFR 1910.120

#### 1.03 RELATED WORK:

A. Section 01552 CONSTRUCTION ZONE SAFETY PLAN

#### 1.04 PREPARATION OF A SITE-SPECIFIC HEALTH AND SAFETY PLAN:

- A. Prior to the start of work on the Site, and no later than seven (7) calendar days after the date of the Notice to Proceed, Contractor shall prepare and submit an initial Site-specific Health and Safety Plan which includes consideration of all known and potential hazards at the Site. Work may not proceed at the project Site until the Contractor's Health and Safety Plan has been received by Engineer.
- B. The Health and Safety Plan shall be submitted to the Engineer for review, before any work can be initiated. The Contractor is responsible for its workers' and Subcontractors' health and safety. Therefore, the Engineer will only review the Contractor's Health and Safety Plan for relevant content. The Contractor shall implement, maintain, and enforce these procedures during all phases of the Work associated with the description of work described in this Section.
- C. The Health and Safety Plan shall include Site access provisions that effectively limit access to work areas to only those persons in full compliance with the requirements of the Occupational Safety and Health Administration (OSHA) 29 Code of Federal Regulations (CFR) 1910.120.
- D. The Contractor shall be cognizant of the minimum health and safety plan standards set forth in 29 CFR 1910.120 and 29 CFR 1926. The Health and Safety Plan shall include, but not be limited to, the minimum requirements specified in Part 2 of this Section.

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# <u>PART 2 – PRO</u>DUCTS

#### 2.01 HEALTH AND SAFETY PLAN:

- A. The health and safety plan shall include, but not necessarily be limited to the following:
  - 1. Identification of Contractor's Site Safety Officer.
    - 2. Identification of Hazards and Risks Associated with Project.
    - 3. Contractor's Standard Operating Procedures, Including Personnel Training and Field Orientation.
    - 4. Respiratory Protection Training Requirements.
    - 5. Levels of Protection and Selection of Equipment Procedures.
    - 6. Type of Medical Surveillance Program.
    - 7. Personal Hygiene Requirements and Guidelines.
    - 8. Zone Delineation of the Project Site.
    - 9. Site Security and Entry Control Procedures.
    - 10. Field Monitoring of Site Contaminants.
    - 11. Contingency and Emergency Procedures.
    - 12. Listing of Emergency Contacts.

#### PART 3 - EXECUTION

#### 3.01 PERSONAL PROTECTIVE EQUIPMENT:

A. The personal protective equipment required to provide the appropriate level of dermal and respiratory protection shall be determined based on the results of continuous air monitoring performed by the Contractor and the standards set forth in the Contractor's health and safety plan. The Engineer may conduct duplicate air monitoring for quality control purposes. Modified Level D protection shall be the minimum requirement for all on-site personnel.

#### **END OF SECTION**

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#### CONSTRUCTION ZONE SAFETY PLAN

# PART 1 - GENERAL

#### 1.01 WORK INCLUDED:

A. This Section covers the provisions for complying with Commonwealth of Massachusetts requirements for construction zone safety plans on public works projects.

#### 1.02 DESCRIPTION:

A. The Contractor shall implement traffic safety and control measures through the construction zone through road closures and detours and mitigate impacts on traffic outside of the construction zone in accordance with these contract documents.

#### 1.02 RELATED WORK:

A. SECTION 01553, UNIFORMED OFFICERS FOR TEMPORARY TRAFFIC CONTROL

#### 1.04 REFERENCES:

701 CMR 7.00 Use of Road Flaggers and Police Details on Public Works Projects

Massachusetts Department of Transportation Standard Specifications for Highways and Bridges – latest edition

# PART 2 - PRODUCTS

2.01 Traffic control devices utilized by the Contractor shall meet the requirements of these contract documents and the latest Massachusetts Department of Transportation (MassDOT) Standard Specifications and Manual On Uniform Traffic Control Devices (MUTCD).

#### PART 3 - EXECUTION

#### 3.01 OPERATION:

A. Contractor shall be responsible for providing all temporary traffic control devices including barricades, barrier fences, signs, drums, cones, impact attenuators and other traffic control devices in accordance with typical traffic management plans and details shown on the drawings or as required by the Engineer.

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- B. The Contractor shall prepare temporary traffic management plans and details that deviates significantly from the typical plans shown on the drawings and submit to the Engineer for review and approval prior to start of the work.
- C. Contractor shall relocate barricades, signs and other devices as necessary as the work progresses as required by the Owner's Traffic Control Officer or the Engineer.
- D. Police details and/or road flaggers shall be utilized on this project as shown on the Construction Zone Safety Plan sheet of the construction drawings, or as the Owner's police department deems necessary.
- E. If police details and/or road flaggers fail to show up for work at the construction zone at the usual time for start of work, or otherwise leave the jobsite before work is completed for the day, the Contractor will follow the provisions of the Alternative Plan.

#### 3.02 ALTERNATIVE PLAN:

- A. In accordance with 701 CMR 7.06(6), whenever required police details/road flaggers do not arrive on time or fail to show up for work, the Contractor will implement the Alternative Plan.
- B. The Alternative Plan for this project is as follows:
  - 1. Contact MassDOT District Area Construction Engineer, local police department and municipality to inform them the scheduled police detail has failed to show up at the project site and that road flaggers are being utilized.
  - 2. If construction zone is within a high-speed area (> 40mph) the Contractor cannot use road flaggers and must stop work until police details arrive. If construction zone is within a low-speed area (< 40mph) the Contractor can use road flaggers who have been trained and certified in temporary roadway flagging.
  - 3. Redeploy crew to work in areas not requiring temporary traffic control (if available).

# **END OF SECTION**

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#### UNIFORMED OFFICERS FOR TEMPORARY TRAFFIC CONTROL

#### PART 1 - GENERAL

# 1.01 WORK INCLUDED:

A. This Section covers the provisions for furnishing Uniformed Officers for Traffic Control and Maintenance of Traffic as described in Section 01552 CONSTRUCTION ZONE SAFETY PLAN.

#### 1.02 DESCRIPTION:

A. The Contractor shall coordinate with the local jurisdiction's Traffic Control Officer to determine the number of Officers deemed necessary to provide for public safety and to maintain a smooth flow of traffic through the construction area(s) affected.

#### 1.03 RELATED WORK:

A. SECTION 01552, CONSTRUCTION ZONE SAFETY PLAN

# PART 2 - PRODUCTS

#### 2.01 UNIFORMED OFFICERS:

- A. Contractor shall provide the Traffic Control Officer with a minimum of 24 hours notice indicating the time of day, street location and confirm number of officers required for traffic control.
- B. Contractor shall give the Traffic Control Officer a minimum of 2 hours prior cancellation notice should Contractor determine that due to weather or conditions beyond its control it would not need the scheduled officers.
- C. Contractor shall pay for officer(s) at the prevailing rate established by the local police department should officers not be needed and the Contractor fails to cancel the officers as noted in 2.01.B above.
- D. Where the Owner is paying directly for Traffic Officers and the Contractor cancels scheduled officers, the Contractor shall be responsible for payment of the wages for cancellations if not cancelled in accordance with 2.01.B and 2.01.C above.

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# **PART 3 - EXECUTION**

# 3.01 OPERATION:

- A. Contractor shall provide barricades, barrier fences, traffic signs, and other traffic control devices as required by the Owners Traffic Control Officer, or as required by the Engineer, to protect the work area from traffic, pedestrians, and animals.
- B. Contractor shall relocate barricades, signs and other devices as necessary as the work progresses as required by the Owners Traffic Control Officer or the Engineer.

**END OF SECTION** 

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#### **DUST CONTROL**

#### PART 1 - GENERAL

#### 1.01 DESCRIPTION:

This section of the specification covers the control of dust via calcium chloride and water, complete.

# PART 2 - PRODUCTS

#### 2.01 CALCIUM CHLORIDE:

- A. Calcium chloride shall conform to the requirements of AASHTO-M 144, Type I or Type II and Specification for Calcium Chloride, ASTM D98. The calcium chloride shall be packaged in moisture proof bags or in airtight drums with the manufacturer, name of product, net weight, and percentage of calcium chloride guaranteed by the manufacturer legibly marked on each container.
- B. Calcium chloride failing to meet the requirements of the specifications or that which has become caked or sticky in shipment, may be rejected by the Engineer.

#### 2.02 WATER:

A. Water shall not be brackish and shall be free from oil, acid, and injurious alkali or vegetable matter.

# PART 3 - EXECUTION

#### 3.01 APPLICATION:

A. Calcium chloride shall be applied when ordered by the Engineer and only in areas which will not be adversely affected by the application. See Section 01570, ENVIRONMENTAL PROTECTION.

- B. Calcium chloride shall be uniformly applied at the rate of 1-1/2 pounds per square yard or at any other rate as required by the Engineer. Application shall be by means of a mechanical spreader, or other approved methods. The Engineer shall determine the number and frequency of applications.
- C. Water may be sprinkler applied with equipment including a tank with gauge-equipped pressure pump and a nozzle-equipped spray bar.
- D. Water shall be dispersed through the nozzle under a minimum pressure of 20 pounds per square inch, gauge pressure.

END OF SECTION

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#### **ENVIRONMENTAL PROTECTION**

#### PART 1 – GENERAL

#### 1.01 DESCRIPTION:

- A. The work covered by this section of the specifications consists of furnishing all labor, materials, tools and equipment and performing all work required for the prevention of environmental pollution during and as a result of construction operations under this contract.
- B. The requirements set forth in this section of the specifications apply to cross-country areas, river and stream crossings, and construction in and adjacent to wetlands, unless otherwise specifically stated.
- C. All work under this Contract shall be in accordance with the Conservation Commissions' Orders of Conditions as well as any conditional requirements applied, all of which are attached to Section 00890, PERMITS.
- D. Prior to commencement of work, the Contractor shall meet with representatives of the Engineer to develop mutual understandings relative to compliance of the environmental protection program.

#### 1.02 RELATED WORK:

- A. Section 00890, PERMITS
- B. Section 01330, SUBMITTALS
- C. Section 01562, DUST CONTROL
- E. Section 02240, DEWATERING
- F. Section 02252, SUPPORT OF EXCAVATION

# PART 2 - PRODUCTS

#### 2.01 SILT FENCE:

A. The silt fence shall consist of a 3-foot wide continuous length sediment control fabric, stitched to a mesh backing, and stapled to preweathered oak posts installed as shown on the drawings. The oak posts shall be 1-1/4-inches by 1-1/4-inches (Minimum

Dimension) by 48-inches and shall be tapered. The bottom edge of the silt fence shall be buried as shown on the drawings.

B. The silt fence shall be DOT Silt Fence PPDM3611, as manufactured by U.S. Silt & Site Supply/Getsco, Concord, NH, or approved equal.

# C. Silt fence properties:

Physical Properties	Test Method	Minimum Value
Grab Strength, lbs.	ASTM-D-4632	124
Grab Elongation, %	ASTM-D-4632	15
Mullen burst, psi	ASTM-D-3786	300
Puncture, lbs.	ASTM-D-4833	65
Trapezoidal Tear, lbs.	ASTM-D-4533	65
UV Resistance2, %3	ASTM-D-4355	80@500 hrs.
AOS, US Sieve No.	ASTM-D-4751	30
Flow Rate, gal/min/sq. ft.	ASTM-D-4491	10
Permittivity, (1/sec)	ASTM-D-4491	0.05 sec <sup>-1</sup>
gal/min/sq. ft.		

# 2.02 STRAW BALES:

A. Straw bales shall consist of certified seed free stems of agricultural grain and cereal crops and shall be free of grasses and legumes. Standard bales shall be 14-inches high, 18- inches wide and 36- to 40-inches long tied with polypropylene twine and weigh within 5 percent of 7 lbs. per cubic ft.

#### 2.03 STRAW WATTLES:

A. Straw Wattles shall consist of a 100% biodegradable exterior jute or coir netting with 100% wheat straw interior filling as manufactured by GEI Works, Sebastian, Florida (Phone: 772-646-0597; website: <a href="www.erosionpollution.com">www.erosionpollution.com</a>), or approved equal.

# 2.04 SILT CURTAIN:

A. The silt curtain shall be a Type-1-Silt-Barrier consisting of 18-ounce vinyl fabric skirt with a 6-inch marine quality floatation device. The skirt shall be ballasted to hang vertical in the water column by a minimum 3/16-inch galvanized chain. The silt curtain

shall extend into the water as shown on the drawings. If necessary, join adjacent ends of the silt curtain by connecting the reinforcing grommets and shackling ballast lines.

#### 2.05 CATCH BASIN PROTECTION:

A. To trap sediment and to prevent sediment from clogging drainage systems, catch basin protection in the form of a siltation sack (Siltsack as manufactured by ACF Environmental, Inc. or approved equal) shall be provided as approved by the Engineer.

#### **PART 3- EXECUTION**

#### 3.01 NOTIFICATION AND STOPPAGE OF WORK:

A. The Engineer will notify the Contractor in writing of any non-compliance with the provisions of the Order of Conditions. The Contractor shall, after receipt of such notice, immediately take corrective action. Such notice, when delivered to the Contractor or its authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails to act promptly, the Owner may order stoppage of all or part of the work through the Engineer until satisfactory corrective action has been taken. No claim for an extension of time or for excess costs or damage incurred by the Contractor as a result of time lost due to any stop work orders shall be made unless it was later determined that the Contractor was in compliance.

#### 3.02 AREA OF CONSTRUCTION ACTIVITY:

A. Insofar as possible, the Contractor shall confine its construction activities to those areas defined by the plans and specifications. All land resources within the project boundaries and outside the limits of permanent work performed under this contract shall be preserved in their present condition or be restored to a condition after completion of construction at least equal to that which existed prior to work under this contract.

#### 3.03 PROTECTION OF WATER RESOURCES:

- A. The Contractor shall not pollute streams, lakes or reservoirs with fuels, oils, bitumens, calcium chloride, acids or other harmful materials. It is the Contractor's responsibility to comply with all applicable Federal, State, County and Municipal laws regarding pollution of rivers and streams.
- B. Special measures should be taken to insure against spillage of any pollutants into public waters.

#### 3.04 CONSTRUCTION IN AREAS DESIGNATED AS WETLANDS ON THE DRAWINGS:

- A. Insofar as possible, the Contractor shall make every effort to minimize disturbance within areas designated as wetlands or within 100-feet of wetland resource areas. Total easement widths shall be limited to the widths shown.
- B. The Contractor shall perform its work in such a way that these areas are left in the condition existing prior to construction.
- C. The elevations of areas designated as wetlands shall not be unduly disturbed by the Contractor's operations outside of the trench limits. If such disturbance does occur, the Contractor shall take all measures necessary to return these areas to the elevations which existed prior to construction.
- D. In areas designated as wetlands, the Contractor shall carefully remove and stockpile the top 24 inches of soil. This topsoil material shall be used as backfill for the trench excavation top layer. The elevation of the trench shall be restored to the preconstruction elevations wherever disturbed by the Contractor's operation.
- E. The Contractor shall use a trench box, sheeting or bracing to support the excavation in areas designated as wetlands.
- F. Excavated materials shall not be permanently placed or temporarily stored in areas designated as wetlands. Temporary storage areas for excavated material shall be as required by the Engineer.
- G. The use of a temporary gravel roadway to construct the pipeline in the wetlands area is not acceptable. The Contractor will be required to utilize timber or rubber matting to support its equipment in these areas. The timber or rubber matting shall be constructed in such a way that it is capable of supporting all equipment necessary to install the pipeline. The timber or rubber matting shall be constructed of materials and placed in such a way that when removed the material below the matting will not be unduly disturbed, mixed or compacted so as to adversely affect recovery of the existing plant life.
- H. Bentonite dams shall be placed in wetlands to prevent drainage. Locations for dams are as indicated on the drawings or as required by the Engineer.
- I. During construction, easements within wetlands shall be lined with a continuous straw/hay bale/siltation fence barrier or line of straw wattles (aka compost filter tube, silt/filter sock).

#### 3.05 PROTECTING AND MINIMIZING EXPOSED AREAS:

- A. The Contractor shall limit the area of land which is exposed and free from vegetation during construction. In areas where the period of exposure will be greater than two (2) months, temporary vegetation, mulching or other protective measures shall be provided as specified.
- B. The Contractor shall take account of the conditions of the soil where temporary cover crop will be used to insure that materials used for temporary vegetation are adaptive to the sediment control. Materials to be used for temporary vegetation shall be approved by the Engineer.

#### 3.06 LOCATION OF STORAGE AREAS:

- A. The location of the Contractor's storage areas for equipment and/or materials shall be upon cleared portions of the job site or areas to be cleared as a part of this project, and shall require written approval of the Engineer. Plans showing storage facilities for equipment and materials shall be submitted for approval of the Engineer.
- B. No excavated materials or materials used in backfill operations shall be deposited within a minimum distance of one hundred (100) feet of any watercourse or any drainage facility. Adequate measures for erosion and sediment control such as the placement of baled **hay or straw** around the downstream perimeter of stockpiles shall be employed to protect any downstream areas from siltation.
- C. There shall be no storage of equipment or materials in areas designated as wetlands.
- D. The Engineer may designate a particular area or areas where the Contractor may store materials used in its operations.
- E. Storage areas in cross-country locations shall be restored to pre-construction conditions with the planting of native species of trees and shrubs.

# 3.07 PROTECTION OF LANDSCAPE:

A. The Contractor shall not deface, injure, or destroy trees or shrubs nor remove or cut them without written authority from the Owner. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorages unless specifically authorized by the Engineer. Excavating machinery and cranes shall be of suitable type and be operated with care to prevent injury to trees which are not to be removed, particularly overhanging branches and limbs. The Contractor shall, in any event, be responsible for any damage resulting from such use.

- B. Branches, limbs, and roots shall not be cut except by permission of the Engineer. All cutting shall be smoothly and neatly done without splitting or crushing. When there is unavoidable injury to branches, limbs and trunks of trees, the injured portions shall be neatly trimmed and covered with an application of grafting wax or tree healing paint as directed.
- C. Where, in the opinion of the Engineer, trees may possibly be defaced, bruised, injured, or otherwise damaged by the Contractor's equipment or by its blasting or other operations, the Engineer may require the Contractor to adequately protect such trees by placing boards, planks, poles or fencing around them. Any trees or landscape feature scarred or damaged by the Contractor's equipment or operations shall be restored as nearly as possible to its original condition at the expense of the Contractor. The Engineer will decide what method of restoration shall be used, and whether damaged trees shall be treated and healed or removed and disposed of under the provisions of Section 02230, CLEARING AND GRUBBING.
- D. Cultivated hedges, shrubs, and plants which could be injured by the Contractor's operations shall be protected by suitable means or shall be dug up, balled and temporarily replanted and maintained. After construction operations have been substantially completed, they shall be replanted in their original positions and cared for until growth is re-established. If cultivated hedges, shrubs, and plants are injured to such a degree as to affect their growth or diminish their beauty or usefulness, they shall be replaced by items of a kind and quality at least equal to that existing at the start of the work.

# 3.08 CLEARING AND GRUBBING:

- A. The Contractor shall clear and grub only on the Owner's land or the Owner's easements, and only the area required for construction operations, as approved by the Engineer. Removal of mature trees (4 inches or greater DBH) will not be allowed on temporary easements.
- B. The Contractor shall not remove trees in the Owner's temporary easements without permission of the Engineer.

#### 3.09 DISCHARGE OF DEWATERING OPERATIONS:

- A. Any water that is pumped and discharged from the trench and/or excavation as part of the Contractor's water handling shall be filtered by an approved method prior to its discharge into a receiving water or drainage system.
- B. Under no circumstances shall the Contractor discharge water to the areas designated as wetlands. When constructing in a wetlands area, the Contractor shall discharge water

- from dewatering operations directly to the nearest drainage system, stream, or waterway after filtering by an approved method.
- C. The pumped water shall be filtered through filter fabric and baled **hay/straw**, a vegetative filter strip or a vegetated channel to trap sediment occurring as a result of the construction operations. The vegetated channel shall be constructed such that the discharge flow rate shall not exceed a velocity of more than 1 foot per second. Accumulated sediment shall be cleared from the channel periodically.

#### 3.10 DUST CONTROL:

- A. During the progress of the work, the Contractor shall conduct its operations and maintain the area of its activities, including sweeping and sprinkling of streets as necessary, to minimize creation and dispersion of dust. If the Engineer decides it is necessary to use calcium chloride for more effective dust control, the Contractor shall furnish and spread the material, as directed. Calcium chloride shall be as specified under Section 01562, DUST CONTROL.
- B. Calcium Chloride shall not be used for dust control within a drainage basin or in the vicinity of any source of potable water.

# 3.11 SEPARATION AND REPLACEMENT OF TOPSOIL:

A. Topsoil shall be carefully removed from cross-country areas where excavations are to be made, and separately stored to be used again as required. The topsoil shall be stored in an area acceptable to the Engineer and adequate measures shall be employed to prevent erosion of said material.

#### 3.12 BALED HAY OR STRAW:

A. To trap sediment and to prevent sediment from clogging drainage systems, baled hay or straw shall be used where shown on the drawings. Care shall be taken to keep the bales from breaking apart. The bales should be securely staked to prevent overturning, flotation, or displacement. All deposited sediment shall be removed periodically. Hay bales shall not be placed within a waterway during construction of the pipeline crossing.

# 3.13 ERECTION AND MAINTENANCE OF SILT FENCE:

A. Where indicated on the drawings or where required by the Engineer, the Contractor shall erect and maintain a temporary silt fence. In areas designated as wetlands, the Contractor shall line the limits of the construction easement with a silt fence. The silt fence shall be used specifically to contain sediment from runoff water and to minimize environmental damage caused by construction.

#### 3.14 SURFACE RESTORATION OF CROSS COUNTRY AREAS:

A. Plantings detailed in Section 02921 shall be conducted when construction of the pipeline has been completed within the areas designated. A one-year guarantee of maintenance will be required on these plantings to ensure that they establish in the area.

#### 3.15 CATCH BASIN PROTECTION:

- A. Catch basin protection shall be used for every catch basin, shown on the plans or as required by the Engineer, to trap sediment and prevent it from clogging drainage systems and entering wetlands. Siltation sacks shall be securely installed under the catch basin grate. Care shall be taken to keep the siltation sacks from breaking apart or clogging. All deposited sediment shall be removed periodically and at times prior to predicted precipitation to allow free drainage flow. Prior to working in areas where catch basins are to be protected, each catch basin sump shall be cleaned of all debris and protected. The Contractor shall properly dispose of all debris at no additional cost to the Owner.
- B. All catch basin protection shall be removed by the Contractor after construction is complete.

#### 3.16 STRAW WATTLES:

- A. The wattles will be placed in a shallow trench (2-3 inches deep) and staked in the ground using wooden stakes driven at 4-foot intervals. The wooden stakes will be placed at a minimum depth of 24-inches into the ground.
- B. The wattles shall be regularly inspected and before and after every forecasted major weather event. All deposited sediment shall be removed and not allowed to accumulate to the top of the wattles. Wattles damaged during construction shall be repaired or replaced as required by the Engineer at no additional cost to the Owner.
- C. The Contractor shall remove all wattles after construction is completed.

#### **END OF SECTION**

#### HANDLING EXISTING FLOWS

#### PART 1 - GENERAL

#### 1.01 WORK INCLUDED:

This Section covers all materials, equipment, and labor required to handle existing sanitary and combined sewage flows and installation and maintenance of all temporary connections, plugs, and by-pass pumping. Upon completion of the culvert installation, all temporary plugs and connections shall be removed and flows transferred to the new pipes. Plug, fill, and abandon existing pipes and manholes as shown on the drawings or as specified herein.

#### 1.02 RELATED WORK:

Section 01330, SUBMITTALS

# 1.03 SUBMITTALS: IN ACCORDANCE WITH REQUIREMENTS OF GENERAL SPECIFICATIONS, SUBMIT THE FOLLOWING:

Submit complete, checked shop drawings, showing equipment, method of by-passing, and the method of transferring flows from the existing system to the new system. Prior to starting work, the Contractor shall submit flow calculations for each pipeline to be bypassed that show pump capacity to be provided. Comply with requirements of Section 01330.

# PART 2 - PRODUCTS - NOT APPLICABLE

### PART 3 - EXECUTION

#### 3.01 MAINTAINING EXISTING FLOWS:

- A. The Contractor shall maintain all flows in the existing system until construction of the sewer main is complete and ready for safe operation.
- B. The Contractor shall protect against surcharging of the existing system upstream of the work area by installing adequate temporary by-pass pumping to handle dry weather and wet weather flows. The bypass system shall have a sufficient capacity to handle full pipe capacity for the pipeline section to be bypassed times 1.25 and shall provide and maintain

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- sufficient flow at all times to prevent any backwater flooding due to obstructions caused by the construction.
- C. The Contractor shall repair any damage that occurs to existing pipes and structures to the satisfaction of the Engineer. Work performed under this section shall be considered incidental and shall not be measured separately for payment.
- D. Existing pipes to be abandoned shall be filled with cement grout. Plugs shall be installed at locations shown on the drawings.
- E. The Contractor shall not allow sanitary flow to discharge to any salt or fresh water body by means of overflow, by-pass pumping, or any other method that may contaminate these water areas.

END OF SECTION

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#### **CLEANING UP**

#### PART 1 - GENERAL

# 1.01 DESCRIPTION:

The Contractor must employ at all times during the progress of its work adequate cleanup measures and safety precautions to prevent injuries to persons or damage to property. The Contractor shall immediately, upon request by the Engineer provide adequate material, equipment and labor to clean up and make safe any and all areas deemed necessary by the Engineer.

#### 1.02 RELATED WORK:

A. Section 01570 ENVIRONMENTAL PROTECTION

#### PART 2 - PRODUCTS

Not applicable

# PART 3 - EXECUTION

#### 3.01 DAILY CLEANUP:

- A. The Contractor shall clean up, at least daily, all refuse, rubbish, scrap and surplus material, debris and unneeded construction equipment resulting from the construction operations and sweep the area. The site of the work and the adjacent areas affected thereby shall at all times present a neat, orderly and workmanlike appearance.
- B. Upon written notification by the Engineer, the Contractor shall within 24 hours clean up those areas, which in the Engineer's opinion are in violation of this section and the above referenced sections of the specifications.
- C. If in the opinion of the Engineer, the referenced areas are not satisfactorily cleaned up, all other work on the project shall stop until the cleanup is satisfactory.

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#### 3.02 MATERIAL OR DEBRIS IN DRAINAGE FACILITIES:

A. Where material or debris has washed or flowed into or has been placed in existing watercourses, ditches, gutters, drains, pipes, structures, such material or debris shall be entirely removed and satisfactorily disposed of during progress of the work, and the ditches, channels, drains, pipes, structures, and work shall, upon completion of the work, be left in a clean and neat condition.

# 3.03 REMOVAL OF TEMPORARY BUILDINGS, STRUCTURES AND EQUIPMENT:

A. On or before completion of the work, the Contractor shall, unless otherwise specifically required or permitted in writing, tear down and remove all temporary buildings and structures it built; shall remove all temporary works, tools and machinery or other construction equipment it furnished; shall remove all rubbish from any grounds which it has occupied; shall remove silt fences and hay bales used for trapping sediment; and shall leave the roads and all parts of the property and adjacent property affected by its operations in a neat and satisfactory condition.

#### 3.04 RESTORATION OF DAMAGED PROPERTY:

A. The Contractor shall restore or replace, when and as required, any property damaged by its work, equipment or employees, to a condition at least equal to that existing immediately prior to the beginning of operations. To this end the Contractor shall do as required all necessary highway or driveway, walk and landscaping work. Materials, equipment, and methods for such restoration shall be as approved by the Engineer.

#### 3.05 FINAL CLEANUP:

A. Before acceptance by the Owner, the Contractor shall perform a final cleanup to bring the construction site to its original or specified condition. This cleanup shall include removing all trash and debris off of the premises. Before acceptance, the Engineer shall approve the condition of the site.

END OF SECTION

07/23/2024 01740-2

# **SPECIAL PROVISIONS - TECHNICAL**

#### **WORCESTER, MA**

Salisbury Street over Beaver Brook

# **SCOPE OF WORK**

All work under this Contract shall be done in conformance with the City of Worcester Standard Construction Specifications and Details dated August 29, 2024, MassDOT Standard Specifications for Highway and Bridges, 2024, the 2017 Construction Standard Details, the Traffic Management Plans and Detail Drawings, MassDOT Work Zone Safety Temporary Traffic Control, the 1990 Standard Drawings for Signs and Supports; the 2015 Overhead Signal Structure and Foundation Standard Drawings, the 2023 Manual on Uniform Traffic Control Devices (MUTCD) with Massachusetts Amendments; the 1968 Standard Drawings for Traffic Signals and Highway Lighting; The American Standard for Nursery Stock; the Plans and these Special Provisions.

The Salisbury Street culvert brings Salisbury Street over Beaver Brook. The culvert is located approximately 300' south of Whisper Drive. The intent of the project is to remove the existing structure. The replacement structure will be a precast concrete box culvert with precast wingwalls on the downstream side. Approach roadway reconstruction and related safety improvements will also be included. In addition, the installation of a new water main, gas main, and a section of sewer main beneath the proposed culvert will be included. Coordination with Eversource will be required for the installation of the gas main. Temporary support of excavation, temporary water control and a temporary stream diversion will be included. The project will be constructed in two stages, which will include the installation of a temporary traffic signal and controls.

# **NOTICE TO OWNERS OF UTILITIES**

The bridge and highway plans indicate the location of the existing known utilities in the vicinity of the work. As the accuracy and completeness of the plans are not guaranteed in any manner, it is the Contractor's responsibility to make his own investigation in order to assure that no damage to existing structures, drainage lines, traffic signal conduits, etc., will occur.

Written notice shall be given by the Contractor to all public service corporations or officials owning or having charge of publicly or privately owned utilities of his/her intention to commence operations affecting such utilities at least one week in advance of the commencement of such operations and the Contractor shall at that time file a copy of such notice with the Engineer.

A list of public and private utilities can be found on the MassDOT website at: <a href="https://www.mass.gov/info-details/utility-contacts-by-district-and-municipality">https://www.mass.gov/info-details/utility-contacts-by-district-and-municipality</a>

Select District 3 on the webpage,

Select the City/Town, and then locate the utility.

The utility contact list is for guidance only and is not guaranteed to be complete or up to date. Town officials are shown at website <a href="https://www.mass.gov/lists/massachusetts-cities-and-towns">https://www.mass.gov/lists/massachusetts-cities-and-towns</a> and select the required City/Town website.

The Contractor shall be responsible for informing the following officials in each area that they are assigned to work in:

Superintendent, Department of Public Works or Town Engineer. Superintendent, Water Department, Superintendent, Sewer Departments. Police Department, Fire Department, Electric Company, Railroads.

# **OWNERS OF UTILITIES**

Electric	Gas
Manny Munoz	Jeffrey Evans-Mongeon
National Grid	Eversource Gas
55 Bearfoot Road	157 Cordaville Road, 3113
Northborough, MA 01532	Southborough, MA 01772
401-895-9726	508-305-6970
manual.munoz@nationalgrid.com	Jeffrey.Evans-Mongeon@eversource.com
Water	Carran
<u>water</u>	<u>Sewer</u>
Michael Daigneault	Mark Elbag
Michael Daigneault	Mark Elbag
Michael Daigneault Worcester DPW	Mark Elbag Worcester DPW
Michael Daigneault Worcester DPW 18 East Worcester Street	Mark Elbag Worcester DPW 20 East Worcester Street
Michael Daigneault Worcester DPW 18 East Worcester Street Worcester, MA 01604	Mark Elbag Worcester DPW 20 East Worcester Street Worcester, MA 01604

# **NOTICE TO OWNERS OF UTILITIES** (Continued)

Department of Public Works
Jason Mello, P.E.
Worcester DPW
20 East Worcester Street
Worcester, MA 01604
508-929-1300
mellojk@worcesterma.gov

### **CITY OF WORCESTER TELEPHONE NUMBERS**

# POLICE DEPARTMENT:

Non-Emergency: 508-799-8600

Paul B. Saucier, Interim Chief of Police

# **FIRE DEPARTMENT:**

Non-Emergency: 508-799-1821 Martin W. Dyer, Fire Chief

#### **DISPOSAL OF SURPLUS MATERIALS**

For those materials not re-usable on-Site as approved by the Owner and Engineer, the Contractor will generate surplus soils and sediment during the excavation for the Site work including but not limited to excavated and dredged material from the bridge replacement work. **The Contractor shall maximize the re-use geotechnical suitable soil on-site.** Where soils are not geotechnically suitable for re-use, surplus soil and sediment will be managed and disposed of as Unregulated Soil and/or Regulated Soils as defined as Items 181.11 through 181.13 and paid on a per ton basis. For the purposes of this section, the term "sediment" is interchangeable with "soil". These categories will be based on analytical data collected by the Contractor with the observation and approval of the Engineer. The Contractor shall segregate excavated materials for differing off-site transportation and disposal categories as required by the Engineer.

All other materials not required or needed for use on the project, and not required to be removed and stacked, shall become the property of the Contractor and shall be removed from the site during the construction period and legally disposed of. No separate payment will be made for this work, but all costs in connection therewith shall be included in the prices bid for various Contract items.

# <u>ITEM 112</u> <u>UNCLASSIFIED EXCAVATION & BACKFILL</u> <u>CUBIC YARD</u>

The work under this Item shall conform to the relevant provisions of Section 140 of the Standard Specifications and the following:

This item shall also include the removal of the existing steel plate on the eastbound shoulder, as indicated on the Plans.

# ITEM 120 CLASS "B" ROCK EXCAVATION AND DISPOSAL CUBIC YARD

The work under this Item shall conform to the relevant provisions of Section 140 of the Standard Specifications and the following:

This item shall also include the demolition of the existing culvert walls and downstream retaining walls comprised of large stones, as indicated on the Plans.

# ITEM 121 TRENCH ROCK EXCAVATION AND DISPOSAL CUBIC YARD

The work under this Item shall conform to the relevant provisions of Section 140 of the Standard Specifications and the following:

This item shall also include the demolition of the existing concrete outfall pipe, as indicated on the Plans.

#### ITEM 141. CLASS A TRENCH EXCAVATION CUBIC YARD

The work under this Item shall conform to the relevant provisions of Section 140 of the Standard Specifications and the following:

This item shall also include the demolition of the existing concrete culvert top slab and upstream retaining wall, and excavation for the proposed box culvert and wingwall footings, as indicated on the Plans.

# ENVIRONMENTAL HEALTH AND SAFETY PROGRAM

**LUMP SUM** 

The work under this item shall consist of ensuring the health and safety of the Contractor's employees and subcontracting personnel, the Engineer, their representatives, the environment, and public welfare from any on-site chemical contamination present in air, soil, water and sediment.

The Contractor shall prepare and implement a site-specific Environmental Health and Safety Plan (EHASP) which has been approved and stamped by a Certified Industrial Hygienist (CIH) and includes the preparer's name and work experience. The EHASP shall include appropriate components required by OSHA Standard 29 CFR 1910.120(b) and the Massachusetts Contingency plan (MCP) 310 CMR 40.0018 and must comply with all applicable state and federal laws, regulations, standards and guidelines, and provide a degree of protection and training appropriate for implementation on the project. The EHASP shall be a dynamic document with provision for change to reflect new information, new practices or procedures, changing site environmental conditions or other situations which may affect site workers and the public. The EHASP shall be developed and implemented independently from the standard construction HASP required to work on all MassDOT construction projects.

Health and safety procedures provided by the Contractor shall comply with all the appropriate regulations that address employee working conditions, including but not limited to standards established by OSHA and National Institute for Occupational Safety and Health (NIOSH). Equipment used for the purpose of health and safety shall be approved by and meet pertinent standards and specifications of the appropriate regulatory agencies.

A copy of the most up-to-date version of the EHASP shall be maintained on-site at all times by the Contractor. The on-site copy shall contain the signature of the Engineer and each on-site employee of the MassDOT, Contractor, and Subcontractors involved with on-site activities. The employee's signature on the EHASP shall be deemed prima facie evidence that the employee has read and understands the plan. Updated copies of signature sheets shall be submitted to the Engineer.

The EHASP shall specify a Contractor Site Safety and Health Officer responsible for implementation of the EHASP and to oversee all construction activities, including handling, storage, sampling and transport, which require contact with or exposure to potentially hazardous materials.

The level of protection required to ensure the health and safety of on-site personnel will be stipulated in the EHASP. The Site Safety and Health Officer shall implement the EHASP based on changing site and weather conditions, type of operation or activity, chemical compounds identified on-site, concentration of the chemicals, air monitoring data, physical state of the hazardous materials, potential duration of exposure to hazardous materials, dexterity required to perform work, decontamination procedures, necessary personnel and type of equipment to be utilized.

# ITEM 180.01 (Continued)

During implementation of the EHASP, a daily log shall be kept by the Site Safety and Health Officer and a copy shall be provided weekly to the Engineer. This log shall be used to record a description of the weather conditions, levels of personal protection being employed, screening data and any other information relevant to on-site environmental safety conditions. The Site Safety and Health Officer shall sign and date the daily log.

#### BASIS OF PAYMENT

Preparation and implementation of the Environmental Health and Safety Program, including the monitoring, protection and storage of all contaminated materials, as well as subsequent modifications to the EHASP, will be paid for at the Lump Sum Bid Price.

Payment of 50% of the Environmental Health and Safety Program contract price will be made upon the initial acceptance of the EHASP by the Engineer. Payment of the remaining 50% of the Environmental Health and Safety Program contract price will be made upon completion of the work. The bid price shall include preparation and implementation of the EHASP as well as the cost for its enforcement by the Site Safety and Health Officer along with any necessary revisions and updates. The work of implementing the Environmental Health and Safety Program includes work involving, but not limited to, the monitoring, protection, and storage of but not limited to, the monitoring, protection, and storage of all surplus soils.

# <u>ITEM 180.02</u> <u>PERSONAL PROTECTION LEVEL C UPGRADE</u> <u>HOUR</u>

The work shall consist of providing appropriate personal protective equipment (PPE) for all personnel in an area either containing or suspected of containing a hazardous environment.

Contingencies for upgrading the level of protection for on-site workers will be identified in the EHASP and the Contractor shall have the capability to implement the personal protection upgrade in a timely manner. The protective equipment and its use shall be in compliance with the EHASP and all appropriate regulations and/or standards for employee working conditions.

Personal Protection Level C Upgrade will be measured and paid only upon upgrade to Level C and will be at the contract unit price, per hour, per worker, required in Level C personal protection. No payment will be made to the Contractor to provide Level D PPE.

#### <u>ITEM 180.03</u> <u>LICENSED SITE PROFESSIONAL SERVICES</u>

Within limited areas of the project site, soils, sediments, surface water, and/or groundwater may be contaminated. A Licensed Site Professional (LSP) shall be required to provide the services necessary to comply with the requirements of the MCP. These services may include sampling, analysis and characterization of potentially contaminated media, preparation of Immediate Response Action (IRA) Plans, Utility-Related Abatement Measure (URAM) and Release Abatement Measure (RAM) Plans, Imminent Hazard Evaluations, status reports, transmittal forms, release notification forms, risk assessments, completion statements, and related documents required pursuant to the Massachusetts Contingency Plan (MCP). LSP hours related to the characterization and disposal of contaminated soil and/or sediment are incidental to the disposal items. An estimate of LSP services to be provided shall be submitted to the Engineer for approval before any LSP activity begins.

The name and qualifications of the LSP and all environmental technicians to be assigned to the project shall be submitted to the Engineer for approval at least four weeks prior to initial site activities. The LSP shall have a current, valid license issued by the Massachusetts Board of Registration of Hazardous Waste Site Cleanup Professionals. The LSP shall have significant experience in the oversight of MCP activities at active construction sites. Qualification packages for the LSP and each technician shall include a resume, all recent work assignments with responsibilities identified (previous 5 years), and applicable training and certifications. A list of all Notices of Noncompliance, Notice of Audit Findings and Enforcement Orders issued by the DEP shall be submitted for all work assignments listed for the LSP and environmental technicians.

The LSP shall evaluate soil and/or sediment with discoloration, odor, and presence of petroleum liquid or sheening on the surface water or groundwater surface, or any abnormal gas or materials in the ground which are known or suspected to be oil or hazardous materials. Excavated soil and sediment which is suspected of petroleum contamination shall be field screened using the jar headspace procedures according to established DEP Guidance. All field screening equipment must be pre-approved by the Engineer. The LSP shall ensure proper on site calibration of all field screening instrumentation.

The Engineer shall be contacted immediately when observations or any field screening results verify contamination requiring further analysis, and/or enhanced management of suspect soil and/or sediment. Any enhanced management of contaminated soil to ensure proper stockpiling and storage is incidental to the LSP Services item. The LSP shall adequately characterize subsurface conditions prior to backfill in areas where contaminated material has been excavated. The Engineer shall approve the locations of the testing sites prior to the sampling.

Contaminated soil, sediment, surface water, and/or groundwater shall be handled in accordance with all applicable state and federal statutes, regulations and policies. The LSP shall adequately characterize contaminated media for comparison to the requirements of the MCP. The Contractor and the LSP shall be aware of the reporting requirements for releases of oil and/or other hazardous material (OHM) as set forth in federal and state laws and regulations, and shall both be held responsible for performing the work in accordance with all applicable Federal and State laws and regulations. The LSP shall maintain written records in a clear and concise format which tracks the excavation, stockpiling, analysis and reuse/disposal of all suspect contaminated soils, sediments, surface water, and groundwater. These records shall be up-to-date and available to the Engineer on a bi-weekly

# ITEM 180.03 (Continued)

basis. The LSP shall review and summarize the laboratory data from any analyses performed on contaminated media. A report shall be delivered to the Engineer outlining the material sampling methods, laboratory analysis results and proposed course of action. The laboratory report together with

Chain of Custody forms for all analytical results shall be submitted to the Engineer within 14 days after completion of such analyses.

The LSP and Contractor shall be held responsible for the submission of all MCP-related documents to the Engineer at least 14 days in advance of any timeframe specified in the MCP and for the timely submission of data and tracking information as noted within this Item. All documents prepared under this Item must be reviewed and signed by the approved LSP. The Contractor and LSP shall be responsible for all fines, penalties and enforcement requirements imposed by applicable regulatory agencies for failure to meet regulatory and contract timeframes. No compensation will be provided for such fines, penalties and enforcement actions.

The Contractor and the LSP shall be aware of the reporting requirements for releases of oil and/or other hazardous material (OHM) as set forth in federal and state laws and regulations, and shall both be held responsible for performing the work in accordance with all applicable Federal and State laws and regulations.

If the Contractor causes a release of OHM, the Contractor shall be responsible for assessing and remediating the release in accordance with all pertinent State and Federal regulations, including securing the services of a LSP, at his own expense.

The LSP shall coordinate all activities involving both MassDOT and the DEP through the Engineer. Any notification of release shall be approved by the Department before submittal to the DEP, except if an imminent hazard condition exists as defined in 309 CMR 4.03(4)(b).

#### LABORATORY TESTING IN SUPPORT OF LSP SERVICES

Laboratory testing provides for analytical testing in support of LSP services related to maintaining MCP compliance, such as delineating the extent and type of contamination present. Sampling and testing for disposal purposes are not included.

In order to maintain compliance with the MCP or other regulatory requirements, the LSP shall request approval from the Engineer to obtain samples from various locations and depths within the project area and to perform laboratory analyses on those samples. With the Engineer's approval of proposed sampling only, the LSP shall then coordinate to schedule soil sampling with the Engineer's on-Site observation only. The samples shall be delivered to a DEP-certified laboratory using proper chain-of-custody documentation for analyses which, depending upon site conditions and suspected and/or identified contaminants of concern, may include, but are not limited to, metals, polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), semi volatile organic compounds (SVOCs), pesticides, polycyclic aromatic hydrocarbons (PAHs), extractable petroleum hydrocarbons (EPHs)

# ITEM 180.03 (Continued)

and volatile petroleum hydrocarbons (VPHs). Subsequent testing, depending upon initial results, may be required for Toxicity Characteristic Leaching Procedure (TCLP) analyses (EPA Method 1311) for metals.

#### METHOD OF MEASUREMENT AND BASIS OF PAYMENT

LSP Services for work under this item will be measured per person, per hour of service provided by LSP, Environmental Technicians and other approved personnel. Travel time shall not be included in the billable hours. LSP hours related to soil/sediment disposal (disposal characterization, landfill acceptance, disposal package preparation, etc.) shall be incidental to disposal items.

The quantity and type of laboratory tests must be approved by the Engineer beforehand. The contractor will be reimbursed upon satisfactory written evidence of payment. The contractor may be required to obtain cost estimates from three DEP certified laboratories for the Engineer to choose the service provider.

Laboratory testing related to soil/sediment disposal (disposal characterization, landfill acceptance, disposal package preparation, etc.) shall be incidental to disposal items.

LSP Services will be paid at the Contractor bid price for each hour, or fraction thereof, spent to perform the work as described above. The bid price shall be a blended rate that includes the cost of the LSP, environmental technicians and other personnel, the performance of all work tasks and field screening, including required equipment, materials and instrumentation, and production of all documentation described above. All requests for payment must be accompanied by the following information: the names of the personnel associated with the work charged under LSP Services, dates and hours worked, work conducted, including, where appropriate, locations as identified on the construction plans, and a copy of the field diary for the dates submitted.

Laboratory Testing will be reimbursed upon receipt of paid invoices for testing approved by the Engineer.

11EM 181.11	<u>DISPOSAL OF UNREGULATED SOIL</u>	TON
<u>ITEM 181.12</u>	<u>DISPOSAL OF REGUATED SOIL -</u> <u>IN-STATE FACILITY</u>	<u>TON</u>
<u>ITEM 181.13</u>	<u>DISPOSAL OF REGULATED SOIL –</u> OUT-OF-STATE FACILITY	<b>TON</b>

T-0.31

The work under these Items shall include the transportation and disposal of contaminated material excavated or excavated and stockpiled. It shall also include the cost of any additional laboratory analyses required by a particular disposal facility beyond the standard disposal test set.

Excavation of existing subsurface materials may include the excavation of contaminated soils. The Contractor shall be responsible for the proper coordination of characterization, transport and disposal, recycling or reuse of contaminated soils. Disposal, recycling, or reuse will be referred to as "disposal" for the purposes of this specification. However, regardless of the use of the term herein, there will be no compensation under these items for reuse within the project limits. The Contractor will be responsible for coordinating the activities necessary for characterization, transport, and disposal of contaminated soils. Such coordination will include the Engineer and his/her designee overseeing management of contaminated materials. Contaminated soils must be disposed of in a manner appropriate for the soil classification as described below and in accordance with the applicable laws of local, state, and federal authorities. The Contractor shall be responsible for identifying disposal facility(ies) licensed to accept the class of contaminated soils to be managed and assure that the facility can accept the anticipated volume of soil contemplated by the project. The Contractor shall be responsible for hiring a Licensed Site Professional (LSP) and all ancillary professional services including laboratories as needed for this work. The Contractor will be responsible for obtaining all permits, approvals, manifests, waste profiles, Bills of Lading, etc. subject to the approval of the Engineer prior to the removal of the contaminated soil from the site. The Contractor and LSP shall prepare and submit to the Engineer for approval all documents required under the Massachusetts Contingency Plan (MCP) and related laws and environmental regulations to conduct characterization, transport, and disposal of contaminated materials.

# **Classes of Contaminated Soils**

The Contractor and its LSP shall determine if soil excavated or soil to be excavated is unregulated soil or contaminated soil as defined in this section. Such materials shall be given a designation for purposes of reuse or disposal based on the criteria of the MCP. Soils and sediments which are not suitable for reuse will be given a designation for purposes of off-site disposal based on the characterization data and disposal facility license requirements. The Classes of Contaminated Soils are defined as follows:

UNREGULATED SOIL consists of soil, fill and dredged material with measured levels of oil and hazardous material (OHM) contamination at concentrations below the applicable Reportable Concentrations (RCs) presented in the MCP. Unregulated soil consists of material which may be reused (or otherwise disposed) as fill within the Commonwealth of Massachusetts subject to the non-degradation criteria of the MCP (310 CMR 40.0032(3), in a restricted manner, such that they are sent to a location with equal or higher concentrations of similar contaminants. Disposal areas include licensed disposal facilities, approved industrial settings in areas which will be capped or covered with pavement or loamed and seeded, and for purposes of this project should be reused as fill within the project site construction corridor whenever possible. The material cannot be placed in residential and/or environmentally sensitive (e.g., wetlands) areas. Under no circumstances shall contaminated soils be placed in an uncontaminated or less contaminated area (including the area above the groundwater table if this area shows no sign of contamination).

The Contractor shall submit to MassDOT the proposed disposal location for unregulated soils for approval. If such a disposal location is not a licensed disposal facility, the Contractor shall submit to the Engineer analytical data to characterize the disposal area sufficiently to verify that the unregulated material generated within the MassDOT construction project limits is equal to or less than the contaminant levels at the disposal site and meets the non-degradation requirements of the MCP. In addition, the Contractor shall provide written confirmation from the owner of the proposed disposal location that they have been provided with the analytical data for both the materials to be disposed as well as the disposal site characterization and that s/he agrees to accept this material. A Material Shipping Record or Bill of Lading, as appropriate, shall be used to track the off-site disposal of unregulated soil and a copy, signed by the disposal facility or property owner, shall be provided to the Engineer in order to document legal disposal of the unregulated material.

The cost of on-site disposal of unregulated soil within the project area will be considered incidental to the item of work to which it pertains.

REGULATED SOIL consists of materials containing measurable levels of OHM that are equal to or exceed the applicable Reportable Concentrations for the site as defined by the MCP, 310 CMR 40.0000. Regulated soil which meets the MCP reuse criteria of the applicable soil/groundwater category for this project area may be reused on site provided that it meets the appropriate geotechnical criteria established by the Engineer. Regulated Soil may be reused (as daily or intermediate cover or pre-cap contouring material) or disposed (as buried waste) at lined landfills within the Commonwealth of Massachusetts or at an unlined landfill that is approved by the Massachusetts Department of Environmental Protection (DEP) for accepting such material, in accordance with DEP Policy #COMM-97-001, or at a similar out-of-state facility. It should be noted that soils which exceed the levels and criteria for disposal at in-state landfills, as outlined in COMM-97-001, may be shipped to an in-state landfill, but require approval from the DEP Division of Solid Waste Management and receiving facility. An additional management alternative for this material is recycling into asphalt. Regulated Soils may also be recycled at a DEP approved recycling facility possessing a Class A recycling permit subject to acceptance by the facility and compliance with DEP Policy #BWSC-94-400. Regulated Soil removed from the site for disposal or treatment must be removed via an LSP approved Bill of Lading, Manifest or applicable material tracking form. This

type of facility shall be approved/permitted by the State in which it operates to accept the class of contaminated soil in accordance with all applicable local, state and federal regulations.

# MONITORING/SAMPLING/TESTING REQUIREMENTS

The Contractor shall be responsible for monitoring, sampling and testing during and following excavation of contaminated soils to determine the specific class of contaminated material. Monitoring, sampling and testing frequency and techniques should be performed in accordance with Item 180.03 – LSP Services. Additional sampling and analysis may be necessary to meet the requirements of the disposal facility license. The cost of such additional sampling and analysis shall be included in the bid cost for the applicable disposal items. The Contractor shall obtain sufficient information to demonstrate that the contaminated soil meets the disposal criteria set by the receiving facility that will accept the material.

No excavated material will be permanently placed on-site or removed for off-site disposal until the results of chemical analyses have been received and the materials have been properly classified. The Contractor shall submit to the Engineer results of field and laboratory chemical analyses tests within seven days after their completion, accompanied by the classification of the material determined by the Contractor, and the intended disposition of the material. The Contractor shall submit to the Engineer for review all plans and documents relevant to LSP services, including but not limited to, all documents that must be submitted to the DEP.

# **Waste Tracking**

Copies of the fully executed Weight Slips/Bills of Lading/ Manifests/Material Shipping Records or other material tracking form received by the Contractor from each disposal facility and for each load disposed of at that facility, shall be submitted to Engineer and the Contractor's LSP within three days of receipt by the Contractor. The Contractor is responsible for preparing and submitting such documents for review and signature by the LSP or other appropriate person with signatory authority, three days in advance of transporting soil off-site. The Contractor shall furnish a form attached to each manifest or other material tracking form for all material removed off-site, certifying that the material was delivered to the site approved for the class of material. If the proposed disposition of the material is for reuse within the project construction corridor, the Contractor shall cooperate with MassDOT to obtain a suitable representative sample(s) of the material to establish its structural characteristics in order to meet the applicable structural requirements as fill for the project.

All material transported off-site shall be loaded by the Contractor into properly licensed and permitted vehicles and transported directly to the selected disposal or recycling facility and be accompanied by the applicable shipping paper. At a minimum, truck bodies must be structurally sound with sealed tail gates, and trucks shall be lined and loads covered with a liner, which shall be placed to form a continuous waterproof tarpaulin to protect the load from wind and rain.

# **Decontamination of Equipment**

Tools and equipment which are to be taken from and reused off site shall be decontaminated in accordance with applicable local, state and federal regulations. This requirement shall include, but not be limited to, all tools, heavy machinery and excavating and hauling equipment used during excavation, stockpiling and handling of contaminated material. Decontamination of equipment is considered incidental to the applicable excavation item.

# REGULATORY REQUIREMENTS

The Contractor shall be responsible for adhering to regulations, specifications and recognized standard practices related to contaminated material handling during excavation and disposal activities. MassDOT shall not be responsible at any time for the Contractor's violation of pertinent State or Federal regulations or endangerment of laborers and others. The Contractor shall comply with all rules, regulations, laws, permits and ordinances of all authorities having jurisdiction including, but not limited to, Massachusetts DEP, the U.S. Environmental Protection Agency (EPA), Federal Department of Transportation (DOT), Massachusetts Water Resources Authority (MWRA), the Commonwealth of Massachusetts and other applicable local, state and federal agencies governing the disposal of contaminated soils.

All labor, materials, equipment and services necessary to make the work comply with such regulations shall be provided by the Contractor without additional cost to MassDOT. Whenever there is a conflict or overlap within the regulations, the most stringent provisions shall apply. The Contractor shall reimburse MassDOT for all costs it incurs, including penalties and/or for fines, as a result of the Contractor's failure to adhere to the regulations, specifications, recognized standard practices, etc., that relate to contaminated material handling, transportation and disposal.

#### **SUBMITTALS**

# I. Summary of Sampling Results, Classification of Material and Proposed Disposal Option.

The following information, presented in tabular format, must be submitted to the Engineer for review and approval prior to any reuse on-site or disposal off-site. This requirement is ongoing throughout the project duration. At least two weeks prior to the start of any excavation activity, the Contractor shall submit a tracking template to be used to present the information as stipulated below. Excavation will not begin until the format is acceptable to MassDOT.

Characterization Reports will be submitted for all soil, sediment, debris and groundwater characterized through the sampling and analysis program. Each report will include a site plan which identifies the sampling locations represented in the Report. The Construction Plan sheets may be used as a baseplan to record this information.

The Sampling Results will be presented in tabular format. Each sample will be identified by appropriate identification matching the sample identification shown on the Chain of Custody Record. The sample must also be identified by location (e.g. grid number or stockpile number). For each sample, the following information must be listed: the classification (unregulated, regulated, etc.), proposed disposal option for the stockpile or unit of material represented, and, all analytical results.

Each Characterization Report will include the laboratory analytical report and Chain of Custody Record for the samples included in the Report.

# II. Stockpiling, Transport, and Disposal

At least two weeks prior to the start of any excavation activity, the Contractor shall submit, in writing, the following for review and shall not begin excavation activity until the entire submittal is acceptable to MassDOT.

#### Excavation and Stockpiling Protocol:

Provide a written description of the management protocols for performing excavation and stockpiling and/or direct loading for transport, referencing the locations and methods of excavating and stockpiling excavated material.

# **Disposal and Recycling Facilities:**

- 1. Provide the name, address, applicable licenses and approved waste profile for disposal and/or recycling location(s) where contaminated soil will be disposed. Present information substantiating the suitability of proposed sites to receive classifications of materials intended to be disposed there, including the ability of the facility to accept anticipated volumes of material.
- 2. Provide a summary of the history of compliance actions for each disposal/recycling facility proposed to be used by the Contractor. The compliance history shall include a comprehensive list of any state or federal citations, notices of non-compliance, consent decrees or violations relative to the management of waste (including remediation waste) at the facility. Material should not be sent to facilities which are actively considered by the DEP, USEPA or other responsible agency to be in violation of federal, state or local hazardous waste or hazardous material regulations. MassDOT reserves the right to reject any facility on the basis of poor compliance history.

#### Transportation:

The name, address, applicable license and insurance certificates of the licensed hauler(s) and equipment and handling methods to be used in excavation, segregation, transport, disposal or recycling.

# III Material Tracking and Analytical Documentation for Reuse/Disposal

The following documents are required for all excavation, reuse and disposal operations and shall be in the format described. At least two weeks prior to the start of any excavation or demolition activity, the Contractor shall submit the tracking templates required to present the information as stipulated below. Excavation or demolition will not begin until the format is acceptable to MassDOT.

All soils, sediments and demolition debris must be tracked from the point of excavation to stockpiling to onsite treatment/processing operations to off-site disposal or onsite reuse as applicable.

#### **Demolition Debris:**

Demolition debris must be tracked if the debris is stockpiled at a location other than the point of origin or if treatment or material processing is conducted. Identification of locations will be based on the station-offset of the location. The tracking table will identify date and point of generation, any field screening such as PID or dust monitoring, visual observations/comments, quantity, and stockpile ID/processing operation location. For each unit of material tracked, the table will also track reuse of the material on-site, providing reuse date, location of reuse as defined by start and end station, width of reuse location by offset, the fill elevation range, quantity, and finish grade for said location. For demolition debris which is not reused on site, the table will also track disposal of the material as defined by disposal date, quantity and disposal facility. The table must provide a reference to any analytical data generated for the material.

#### **Soil/Sediment:**

Soil excavation will be identified based on the station-offset of the excavation location limits. The tracking table will identify date and point of generation, any field screening such as PID or dust monitoring, visual observations, quantity, and stockpile number/location. For each unit of material tracked, the table will also track reuse of the material on-site and disposal of the material off-site using the same categories identified for demolition debris above.

#### METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Disposal of contaminated soil shall be measured for payment by the Ton of actual and verified weight of contaminated materials removed and disposed of. The quantities will be determined only by weight slips issued by and signed by the disposal facility. The most cost-effective, legal disposal method shall be used. The work of the LSP for disposal under all of these items shall be incidental to the work with no additional compensation.

<u>ITEM 181.11</u> Measurement for Disposal of Unregulated Soil shall be under the Contract Unit Price by the weight, in tons, of contaminated materials removed from the site and transported to and disposed of at an approved location or licensed facility, and includes any and all costs for approvals, permits, fees and taxes, additional testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

<u>ITEM 181.12</u> Measurement for Disposal of Regulated Soil – In-State Facility shall be under the Contract Unit Price by the weight in tons of contaminated materials removed from the site and transported to and disposed of at an approved in-state facility, and includes any and all costs for approvals, permits, fees and taxes, testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

<u>ITEM 181.13</u> Measurement for Disposal of Regulated Soil - Out-of-State Facility shall be under the Contract Unit Price by the weight in tons of contaminated materials removed from the site and transported to and disposed of at an approved out-of-state facility, and includes any and all costs for approvals, permits, fees and taxes, testing/characterization required by the facility beyond the standard disposal test set, decontamination procedures, transportation and disposal.

The Contractor shall refer to Attachment A for sediment characterization sampling performed in 2022. This data is provided for reference only and does not replace surplus material disposal characterization to be performed by the Contractor during construction.

# <u>ITEM 182.1</u> <u>INSPECTION AND TESTING FOR ASBESTOS</u> <u>LUMP SUM</u>

The work shall include the inspecting and testing of all materials, including but not limited to the existing abutments and substructure mechanical components, the water main insulation under the bridge, water main pipes and sewer pipes and other utility components suspected of containing asbestos. When any demolition is required to enable the inspection and testing of the suspected material it will be considered incidental to this Item and the Contractor must perform all asbestos handling and testing in accordance with the regulations stated below.

Dust suppression in the form of light water sprays, foams, dust suppressants and calcium chloride will be implemented as required to control dusting during any disturbance of asbestos suspected material. Alternatively, intrusive activities may be reduced or curtailed under high wind or heavy rain conditions, which in the opinion of the Health and Safety Plan (HASP) may pose a safety hazard to the workers.

The Contractor shall employ the services of a Massachusetts licensed "Asbestos Inspector" to inspect the material to determine whether or not "<u>ITEM 182.2 REMOVAL OF ASBESTOS</u>" is required. Should the asbestos inspector determine laboratory testing is required, a state certified laboratory shall be used to perform all necessary tests.

The work associated with Item 182.1 Inspection and Testing for Asbestos is expected for, but not limited to, existing utility insulation material on exposed pipes, and is applicable during the demolition phase.

#### MEASUREMENT AND BASIS OF PAYMENT

Measurement and payment for the work to be done under this Item shall be paid for at the contract bid price for Item 182.1, which price shall include full compensation for all necessary equipment, labor, materials, tools, equipment, disposal and laboratory testing necessary to accomplish the specified work in a manner satisfactory to the Engineer. Under Item 182.1, a payment of 50% of the lump sum bid price of this item will be made upon the start of the demolition phase to the satisfaction and approval of the Engineer. The remaining 50% of the lump sum bid price of this Item will be paid following the completion of the demolition phase, as determined by the Engineer.

# ITEM 182.2 REMOVAL OF ASBESTOS FOOT

The work shall include the removal and satisfactory disposal of existing asbestos. The Contractor's attention is directed to the fact that existing asbestos shall be inspected and tested prior to removal, to determine if special removal and disposal is required. The Contractor shall follow all the rules and regulations stated in "ITEM 182.1 INSPECTION AND TESTING FOR ASBESTOS". If asbestos is present, the Contractor shall follow all the rules and regulations stated in the section "REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING MATERIALS", under this item. The Contractor should notify and coordinate his/her efforts with the proper utility accordingly.

#### REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING MATERIALS

This section specifies the requirements for the handling and removal of asbestos containing material. The Contractor must perform all asbestos handling and removal work in accordance with these specifications and the following additional requirements.

U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA) including but not limited to:

- 29 CFR 1910 Section 1001 and 29 CFR 1926 Section 58 Occupational exposure to Asbestos, Tremolite, Anthophyllite and Actinolite, Final Rule
- 29 CFR 1910 Section 134 Respiration Protection
- 29 CFR 1926 Construction Industry
- 29 CFR 1910 Section 2 Access to Employee Exposure and Medical Records

- 29 CFR 1910 Section 1200 Hazard Communication
- 29 CFR 1910 Section 145 Specifications for Accident Prevention Signs and Tags

U.S. Environmental Protection Agency, (EPA) including but not limited to:

- 40 CFR 762, CPTS 62044, FRL 2843-9, Federal Register Vol. 50 no.134, July 12, 1985 p.28530 - 28540 Asbestos Abatement Projects Rule
- 40 CFR 61 Subpart A Regulation for Asbestos
- 40 CFR 61 Subpart M (Revised Subpart B) National Emission Standard for Asbestos

U.S. Department of Transportation 49 CFR 172 and 173

Massachusetts Department of Labor Standards, (DLS) including but not limited to:

• 454 CMR 28.00 Removal, Containment and Encapsulation of Asbestos

Massachusetts Department of Environmental Protection (DEP) including but not limited to (supplementing subsection 7.01):

- 310 CMR 7.00, Section 7.09 Odor and Dust, Section 7.10 Noise, Section 7.15 Air Pollution Control Regulations
- 310 CMR 18.00 and 19.00 Solid Waste Regulations

Massachusetts Division of Industrial Safety 45 CMR 10.00

Local Requirements including but not limited to those of Health Departments, Fire Departments and Inspection Services Departments.

Wherever there is a conflict or overlap of the above references, the most stringent provision shall apply.

All asbestos material shall be removed and properly disposed of by a contractor or subcontractor with a current Massachusetts Abatement Contractors License issued by the Department of Labor Standards. Work shall be supervised by a competent person as required by OSHA in 29 CFR 1926 to ensure regulatory compliance. This person must have completed a course at an EPA Training Center or equivalent course in asbestos abatement procedures, have had a minimum of four years onthe-job training and meet any additional requirements set forth in 29 CFR 1926 for a Competent Person. This person must also be certified by the Commonwealth as an Asbestos Supervisor and Asbestos Project Designer as required by 454 CMR 28.00.

Asbestos removal work shall be coordinated with all other work under the contract and shall be completed prior to performing any activities which could disturb the asbestos material or produce airborne asbestos fibers.

Dust suppression in the form of light water sprays, foams, dust suppressants and calcium chloride will be implemented as required to control dusting during trenching and excavation. Alternatively, intrusive activities may be reduced or curtailed under high wind or heavy rain conditions, which in the opinion of the Health and Safety Plan (HASP) may pose a safety hazard to the workers.

#### NOTIFICATION AND PERMITS

The Contractor shall prepare a formal pre-notification form at least ten (10) days prior to the start of asbestos removal work. This form must be submitted to the appropriate Regional Office of the Massachusetts Department of Environmental Protection and to the U.S. Environmental Protection

Agency Region I Air and Hazardous Material Division. A copy of the submitted forms must be provided to the Engineer and kept at the work site.

Prior to starting any work, the Contractor shall also obtain any required asbestos removal permit(s) from the city/town. A copy of the permit(s) must be provided to the Engineer and posted at the work site.

The Contractor shall also obtain and pay all other applicable asbestos waste transportation and disposal permits, licenses and fees.

#### STANDARD OPERATING PROCEDURES

The standard operating procedure shall ensure the following:

- 1. Proper site security including posting of warning signs and restricting access to prevent unauthorized entry into the work spaces.
- 2. Proper protective clothing and respiratory protection prior to entering the work spaces.
- 3. Safe work practices including provisions for communications; exclusion of eating, drinking, smoking, or use of procedures or equipment that would in any way reduce the effectiveness of respiratory protection or other engineering controls.
- 4. Proper exit practices from the work space though the showering and decontamination facilities.
- 5. Removing asbestos containing material in ways that minimize release of fibers.
- 6. Packing, labeling, loading, transporting and disposing of contaminated material in a way that minimizes or prevents exposure and contamination.

- 7. Emergency evacuation of personnel, for medical or safety (fire and smoke) so that exposure will be minimized.
- 8. Safety from accidents in the work space, especially from electrical shocks, slippery surfaces and entanglements in loose hoses and equipment.
- 9. Provisions for effective supervision and OSHA specified personnel air monitoring for exposure during work.

#### REQUIRED SUBMITTALS

The Contractor shall submit to the Engineer the following listed items at least ten (10) calendar days prior to the start of asbestos work. No asbestos removal work activities shall commence until these items are reviewed by the Engineer, unless otherwise waived. Submittals shall be clearly labeled and in sufficient detail to enable the Engineer to form an opinion as to its conformity to the specifications.

- 1. Name, experience and DLS certification of proposed Supervisors and Foreman responsible for asbestos work.
- 2. Summary of workforce by disciplines and a notarized statement documenting that all proposed workers, by name, have received all required medical exams and have been properly trained and certified for asbestos removal work, respirator use and appropriate Massachusetts DLS, EPA and OSHA standards.
- 3. Notarized statement that workers are physically fit and able to wear and use the type of respiratory protection proposed for the project. Notarized certification signed by an officer of the abatement contracting firm that exposure measurements, medical surveillance and worker training records are being kept in conformance with 29 CFR 1926.
- 4. Written plan of action and standard operating procedures (HASP) to include: location and layout of decontamination areas; sequencing of asbestos work; detailed schedule of work activities by date and interface with other project activities which affect work performance; methods used to assure safety and security; worker protection and exposure monitoring; contingency and emergency evacuation procedures; detailed description of methods to be employed to control pollution; waste handling procedures.
- 5. Written respiratory protection program specifying level of protection intended for each operation required by the project and details of daily inspection and maintenance elements.

- 6. Copies of the U.S. EPA, State and local asbestos removal pre-notification forms. If applicable, lists and copies of all permits, licenses, or manifests which will be applied for and used.
- 7. Name, location and applicable approval certificates for primary and secondary landfill for disposal of asbestos-containing or asbestos contaminated waste. Name, address and licenses number(s) of hauler permitted to transport waste. (Submit copies of completed manifests upon disposal).

The Contractor must provide copies of daily inspection and record logs upon request of the Engineer, at any time during project. This information will include but is not limited to work area entry data, respirator inspections and maintenance, HEPA-exhaust inspections and maintenance and other work applicable activities or reports of accidents or unusual events.

#### **COMPENSATION**

#### **Method Of Measurement:**

ITEM 182.2 will be measured by the FOOT for the complete removal and disposal of the asbestos containing material.

#### **Basis Of Payment:**

Payment will be at the contract unit price per FOOT for ITEM 182.2 REMOVAL OF ASBESTOS, as specified above including all materials, tools, equipment and labor necessary to complete the work specified above.

All costs in connection with the protection of the general public, private property and all costs associated with the proper disposal of the material removed shall be included in the price and no additional compensation will be allowed.

The work under this item shall conform to the relevant provisions of Section 200 of the Standard Specifications and the following:

Scope of Work: The Contractor shall furnish all labor, equipment, materials, and incidentals necessary to install the stormwater treatment unit (SWTU) and appurtenances specified in the drawings and these specifications.

# **Quality Assurances**

All components shall be subject to inspection by the engineer at the place of manufacture and/or installation. All components are subject to be rejected or identified for repair if the quality of materials and manufacturing do not comply with the requirements of this specification. Components which have been identified as defective may be subject for repair, where final acceptance of the component is contingent on the discretion of the Engineer.

The manufacturer shall guarantee the SWTU components against all manufacturer originated defects in materials or workmanship for a period of twelve (12) months from the date the components are delivered to the owner for installation. The manufacturer shall, upon its determination, repair, correct, or replace any manufacturer originated defects advised in writing to the manufacturer within the referenced warranty period. The use of SWTU components shall be limited to the application for which it was specifically designed.

The SWTU manufacturer shall submit to the Engineer of Record a "Manufacturer's Performance Certification" certifying that each SWTU is capable of achieving the specified removal efficiencies listed in these specifications. The certification shall be supported by independent third-party research.

#### **Submittals**

The Contractor shall prepare and submit shop drawings in accordance with Section 01330, SUBMITTALS of the contract documents. The shop drawings shall detail horizontal and vertical dimensioning, reinforcement and joint type and locations.

#### Materials and Design

Internal Components and appurtenances shall conform to the following:

- 1. Screen and support structure shall be manufactured of Type 316 and 316L stainless steel conforming to ASTM F1267-01.
- 2. Hardware shall be manufactured of Type 316 stainless steel conforming to ASTM A320.
- 3. Fiberglass components shall conform to the National Bureau of Standards PS-15 and coated with an isophalic polyester gelcoat.

#### Performance

The SWTU shall remove oil and sediment from stormwater during frequent wet weather events and retain these pollutants within the device for later removal.

# ITEM 240.1 (Continued)

The SWTU device shall be engineered, designed and sized to treat a minimum of 90 percent of the annual runoff volume using a widely accepted continuous simulation runoff model which uses rainfall data records which includes antecedent conditions as well as rainfall periods. Rainfall records should be comprised of 15-years of rainfall data or a longer continuous period if available for a given location, but in all cases at least a minimum of 5-years continuous rainfall.

The SWTU device shall be capable of removing 80% of the total suspended solids (TSS) load, without scouring previously captured pollutants.

The SWTU device shall have New Jersey Corporation for Advanced Technology (NJCAT) verification that the device is acceptable for on-line installation based on full-scale third-party scour testing.

The SWTU shall be designed with a sump chamber for the storage of captured sediments and other negatively buoyant pollutants in between maintenance cycles. The minimum storage capacity provided by the sump chamber shall be 0.9 CY. The boundaries of the sump chamber shall be limited to that which do not degrade the SWTU's treatment efficiency as captured pollutants accumulate. The sump chamber shall be separate from the treatment processing portion(s) of the SWTU to minimize the probability of fine particle re-suspension. To not restrict the Owner's ability to maintain the SWTU, the minimum dimension providing access from the ground surface to the sump chamber shall be 20 inches in diameter.

Petroleum hydrocarbon storage capacity in the SWTU shall be a minimum 35 gallons. The SWTU device internal hydrocarbon storage area shall include a minimum of 12 inches of double wall containment for the full circumference of the device to provide safe oil and other hydrocarbon material storage and ground water protection.

#### Manufacturer

The manufacturer of the SWTU shall be one that is regularly engaged in the engineering design and production of systems deployed for the treatment of stormwater runoff for at least five (5) years and which have a history of successful production, acceptable to the Engineer.

The SWTU(s) shall be a Stormceptor 450i device, as manufactured by Imbrium Systems Inc., CDS2015-4, as manufactured by Contech, or approved equal.

# Handling and Storage

The Contractor shall exercise care in the storage and handling of the SWTU components prior to, and during, installation. Any repair or replacement costs associated with events occurring after delivery is accepted and unloading has commenced shall be borne by the Contractor.

#### Installation

Each SWTU shall be constructed according to the sizes shown on the drawings and as specified herein. Install at elevations and locations shown on the drawings or as otherwise required by the Engineer.

# ITEM 240.1 (Continued)

Place the SWTU on a granular subbase of minimum thickness of six inches after compaction, or of greater thickness and compaction, if specified elsewhere. The granular subbase shall be checked for level prior to setting the unit.

The SWTU shall be installed in accordance with the manufacturer's recommendations and related sections of the Contract Documents. The manufacturer shall provide the Contractor installation instructions and offer on-site guidance during the important stages of the installation, as identified by the manufacturer, at no additional expense. A minimum of 72 hours notice shall be provided to the manufacturer prior to their performance of the services included under this subsection.

The Contractor shall fill all voids associated with lifting provisions provided by the manufacturer. These voids shall be filled with non-shrinking grout providing a finished surface consistent with adjacent surfaces. The contractor shall trim all protruding lifting provisions flush with the adjacent concrete surface in a manner, which leaves no sharp points or edges.

The Contractor shall remove all loose material and pooling water from the SWTU prior to the transfer of operational responsibility to the Owner.

# **BASIS OF PAYMENT**

Compensation for Stormwater Treatment Unit will be paid for at the contract unit price PER EACH under Item 240.1, Stormwater Treatment Unit. This shall include full compensation for all labor, equipment, materials, and incidentals for the satisfactory completion of the work.

# ITEM 301.301 30 INCH STEEL PIPE CASING FOR WATER PIPE

The work under this Item shall conform to the relevant provisions of Section 301 of the Standard Specifications and the following:

This item shall consist of furnishing and installing the new water pipe sleeve. The work shall also include excavating, backfilling, chlorinating, testing for leakage, proposed fill material to fill annular space between sleeve and water main, and other steps as may be necessary for the construction of new sections of existing water main systems as specified herein, as shown on the plans, or as directed by the Contracting Officer.

# ITEM 470.1 WOOD FENCE, REMOVE AND RESET LUMP SUM

The work under this Item shall conform to the relevant provisions of Section 470 of the Standard Specifications and the following:

This item shall consist of removing the existing wood fence and resetting it following the completion of the project. If required, replacement of the fence with a new fence of similar size and shape shall be paid for under this item.

# ITEM 698.4. GEOTEXTILE FABRIC FOR PERMANENT EROSION CONTROL

The work under this item shall conform to the relevant provisions of Section 828 of the Standard Specifications and the following:

This item includes furnishing of all labor, materials, and equipment necessary to install specified geotextile fabrics in locations shown on the drawings and as required by the Engineer.

#### **PRODUCTS**

The geotextile fabric shall be composed of continuous-filament fibers bonded together to form a sheet. The fabric shall be an average of 20 mils thick and possess the characteristics of Tencate Mirafi 140N.

#### METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Compensation for work to be done under this Item shall be paid for at the contract unit price PER SY under Item 698.4, Geotextile Fabric for Permanent Erosion Control. This shall include full compensation for all labor, equipment, materials, and incidentals for the satisfactory completion of the work.

**EACH** 

The work under this item shall conform to the relevant provisions of Section 828 and 840 of the Standard Specifications amended or supplemented as follows:

This item includes removing, temporary stacking and resetting of all non-standard signs as shown on the plans and as required by the Engineer.

#### **CONSTRUCTION METHODS**

The Contractor shall carefully remove and reset existing sign, attachment hardware and sign supports posts as shown on the Contract Drawings and as required by the Engineer. Work under this item also includes excavation of the existing foundations for the sign at the Engineer's discretion, if the existing foundation will not interfere with new construction, it may be removed to a depth of 12 inches below the existing ground. The hole shall be backfilled with gravel and compacted, and the existing surfaces restored or replaced in kind.

Sign, attachment hardware and sign support posts shall be satisfactory stored and protected until the time that they are reset as shown on the Contract Drawings and as required by the Engineer.

The contractor shall take all necessary precautions not to damage or lose of the sign during the removal process. Any sign, attachment hardware, and sign supports damaged beyond use shall be replaced by the Contractor at no cost to the City of Worcester. Damaged components shall be properly disposed of by the Contractor. Sign, attachment hardware, and sign support posts that are determined by the Engineer to be unsuitable for reuse shall be replaced with new materials and are incidental to this item.

#### METHODS OF MEASUREMENT AND BASIS OF PAYMENT

Compensation for work to be done under this Item shall be paid for at the contract unit price per EACH under Item 734., Sign Removed and Reset. This shall include full compensation for all labor, materials, equipment, excavation and disposal of the existing foundation, supplying and placing of gravel backfill and compaction, the restoration of replacement in kind of disturbed surfaces, and all incidental costs required to complete the work.

Item 874.8 will be measured for payment by the Each miscellaneous sign removed and reset.

#### **DESCRIPTION**

The purpose of this item is to provide additional material to restore the disturbed areas of the streambed, as directed by the Engineer.

This work shall consist of removing, stockpiling, and replacing native streambed material within the invert of the proposed box culvert, as shown on the plans. The work shall be completed in conformity with the lines, grades, thicknesses and typical sections as shown on the plans.

#### MATERIAL

The natural streambed material is to be installed as depicted on the plans. Natural streambed material shall be existing streambed material, having a consistent character and shall be derived from the existing streambed.

Any stone excavated from the existing streambed during riprap installation shall be stockpiled and reused for streambed restoration, provided the excavated stone is characteristic of the existing stream material upstream and downstream of the work area, or meets the below criteria. The elevations and conditions of the existing streambed shall be maintained to the maximum extent practicable.

If the excavated material is not suitable or there is not enough material, the natural streambed material shall be locally sourced, rounded river stone, that matches the composition of the native river bed (see Figure A). The following gradation may be used as a guide.

#### Stream Bed Material Gradation

Stone/Sieve Size	% Finer
900 mm (36 inches)	100
300 mm (12 inches)	30-75
4.75 mm (No. 4)	4-30
75 μm (No. 200)	4-6

# <u>ITEM 767.772</u> (Continued)

#### **CONSTRUCTION**

Appropriate streambed material shall be installed on top of the bottom of the box culvert to match existing conditions, as depicted on the plans, to restore streambed habitat and aesthetics. The material shall be installed during dewatered conditions in accordance with the environmental permits. Where appropriate based on existing conditions at the site, a higher proportion of larger native boulders from the natural streambed material mix shall be placed along the edge of the channel to protect the banks or structures (see Figure B). Larger material shall also be installed in the channel to maintain a natural level of hydraulic roughness and re-establish fish habitat (see Figures A and B).

The Contractor shall place native or new streambed material in the bottom invert of the proposed box culvert, to the depth, lines and grades specified on the Plans. The material shall be placed in a manner that will produce a non-uniform surface with larger stones protruding above the smaller ones.

Once all material has been placed in the stream channel and approved by the Geomorphologist and Resident Engineer, the Contractor shall remove the temporary stream water control in such a way to slowly wet the stream to minimize the initial sediment pulse. Every attempt shall be made to minimize the downstream movement of sediment.

The final streambed shall look like a natural stream, shall match nearby river reaches, and there shall be minimal to no subsurface flow upon final inspection by the Project Engineer and Geomorphologist.

The Contractor shall submit to the Resident Engineer for approval prior to the start of operations, a placement plan and method of placement.

#### METHOD OF MEASUREMENT AND BASIS OF PAYMENT

The quantity of streambed material to be measured for payment will be the number of cubic yards of streambed material imported to the site and installed in the complete and accepted work, measured within the limits shown on the Plans or as directed by the Engineer.

The unit price bid per cubic yard for natural streambed material shall include the cost of all labor, equipment and incidental materials required to excavate the native material from its source, stockpile and reuse the material by placing it in specified locations in conformance with this specification. In addition, the unit price bid per cubic yard shall include the cost of all labor, materials and equipment necessary to satisfactorily complete the installation of new streambed material.

Streambed preparation work shall be considered as included under the work for this item.

# ITEM 767.772 (Continued)

# Figure A



Figure B



# <u>ITEM 816.81</u> <u>TEMPORARY TRAFFIC CONTROL SIGNAL</u> <u>LUMP SUM</u>

Work under the above Item shall be performed according to the provisions of Section 800 of the Standard Specifications, supplemented by the following:

The work includes furnishing and installing of portable temporary traffic control signal (TTCS) equipment, signs, temporary vehicle detection and providing all incidental materials necessary for operating and controlling the temporary traffic control signals, as shown on the plans.

The Contractor shall provide a Temporary Traffic Control Signal (TTCS) throughout the duration of construction while alternating one-way traffic is required. The traffic signal (TS) shall provide a fully-operational portable temporary traffic control signal system at the specified location that conforms to MUTCD standards are guidance and as required by the Engineer.

Each stage of alternating one-way traffic consists of three portable temporary traffic control signals. The system must operate continuously when deployed. The City of Worcester reserves the right to terminate this item at any time if it determines the system is not performing in accordance with this Specification or the Contractor has not met the responsibilities identified in this Specification.

#### **MATERIALS**

Provide materials that are in accordance with the requirements of this Special Specification and the details shown on the plans. The system must comply with the manufacturer's specifications and recommendations. A list of approved equipment can be found on MassDOT's Qualified Traffic Control Equipment List under Section 850: Traffic Controls for Construction and Maintenance Activities.

#### Section 850: Traffic Controls for Construction and Maintenance Activities (mass.gov)

Maintain an adequate inventory of parts to support maintenance and repairs of the portable temporary traffic control signal system within allowable downtime limits.

Furnish, assemble, fabricate, or install materials referenced under this Specification that are corrosion resistant, in good working condition, and in strict conformance with the details shown on the plans or as directed.

Provide the equipment, supplies, materials, and labor required to make the system operational.

Assume responsibility for communication costs including cellular telephone service, FCC licensing, wireless data networks, satellite and internet subscription charges, solar power system support, and battery charging and maintenance. In addition to these requirements, repair or replace any equipment damaged due to crashes, vandalism, adverse weather, etc. that may occur during the Contract period.

#### **EQUIPMENT**

Ensure the portable temporary traffic control signal system is comprised of the items required to provide an operational system and as shown on the plans. Furnish equipment under this Specification that is in good working condition. The equipment furnished and installed under this Section must include the following:

- Platform,
- power,
- portable trailers,
- portable traffic control signal system,
- communication system,
- built-in controller,
- signs.

Furnish a platform that is painted highway safety orange and clearly marked with the manufacturer, serial number, and emergency phone number. Equip the platform with a digital LED readout displaying the current battery voltage at all times and a 110 V charger to facilitate external charging.

# **POWER**

Batteries. Provide a unit equipped with batteries to power the system components 24 hr. a day for 7 days each week. Have additional batteries on standby.

Solar Panels. Provide a unit equipped with solar panels that generate enough power to enable the system to continually recharge the batteries without external charging.

Portable Trailers. Provide portable trailers or carts with trailer lights and delineated with retroreflective material for mounting each portable temporary traffic control signal system unit.

Portable Traffic Control Signal System (TTCS). Furnish, operate, and maintain new or used portable traffic signal units. Assure used units are in good working condition and approved before use. The portable traffic signal units must have the capability of communicating and programming in accordance with the requirements of the NEMA TS-5 (2017) Standard. Units will remain the property of the Contractor.

Communication System Requirements. All TTCSs within the system must have the ability to communicate via 900 MHz wireless radio as a primary data communication method between units.

If wireless connectivity is not feasible, hardwired connectivity will be an acceptable alternative.

Wireless Communication. When wireless radio communication is used, the radio units must maintain the communication link at a minimum distance of 1 mi. under normal operating conditions. Normal operating conditions should be defined as a clear line of sight between TTCS units. The radio system must conform to the applicable Federal Communication Commission requirements and all applicable state and local requirements.

Hardwired Communication. If hardwired communication is used, deploy the communication cable in a manner that will not intrude in the direct work area of the project or obstruct vehicular and pedestrian traffic.

The portable traffic control signal system units. Two portable traffic control signal system must have two signal heads and one portable traffic control signal system facing driveway must have at minimum one signal head. Signal heads must consist of 3 LED indications as follows:

- one 12-in. diameter steady red ball indication over,
- one 12-in. diameter steady yellow ball indicator, and
- one 12-in. diameter steady green ball indicator

Mount all signal indications in a polycarbonate signal head with visors.

#### **CONSTRUCTION**

At least 30 days prior to implementation of each stage, or applicable sub-stages if traffic signal modifications are required, submit a 1:20 scale temporary traffic control signal plan for the location to the Engineer for review. The TS Plan shall be stamped, dated and signed by a professional engineer registered in the Commonwealth of Massachusetts, and shall include the following:

- Dimensions of Lanes, Shoulders, and Islands
- Design and locations of temporary signal equipment and their supports
- Signal Phasing and Timing
- Location of Signal Appurtenances
- Location of Signing and Pavement Markings (stop bars, lane lines, etc.)
- Location, method, and mode of Temporary Detection

The Engineer's approval of the TS plan does not relieve the Contractor of ensuring the TS meets the requirements of the MUTCD. The Contractor shall not implement the TS plan until all review comments have been adequately addressed.

At Construction Notice to Proceed, the Contractor shall assume maintenance responsibilities of the above referenced temporary traffic control signal locations. The Contractor shall notify the Engineer for the project records of all dates when TS any of the above TS locations has been modified in any way.

Notify the following parties that TTCS maintenance responsibility has been transferred to the Contractor: Signal Owner, the Engineer, Municipal Engineer (or other designated Municipal traffic control signal operations official), and the applicable local Police Department. Provide these parties with a list of telephone numbers of personnel who will be on-call 24 hours/day and 7 days/week, during TTCS.

Respond to traffic signal malfunctions by having a representative at the site within three hours from the initial contact. Within twenty-four (24) hours, the Contractor shall have the traffic signal operating according to plan. It shall be the Contractor's responsibility to arrange for Police Details to temporarily control intersection vehicular and pedestrian traffic movements during times when the TS at any of the above locations are not in full- or partial-operation.

If the Engineer determines that the nature of a malfunction requires immediate attention and/or the Contractor does not respond within three (3) hours, then an alternate maintenance service will be called to repair the signal. The Contractor shall be responsible for expenses incurred by the alternate maintenance service for each call. The alternate maintenance service may be the owner of the signal or another qualified electrical contractor.

Installation.

Install new or used TTCSs in conformance with the manufacturer's specifications.

Assure used units are in good working condition and are approved before use. Units will remain the property of the Contractor.

Install system components as shown on the plans, or as directed.

Use established industry and utility safety practices to erect assemblies near overhead or underground utilities.

Operational Requirements.

The portable traffic control signal units must have the capability of communicating and programming in accordance with the requirements of the NEMA TS-5 (2017) Standard.

Programming. Program TTCSs in 1-sec. increments from 3 to 999 sec. All units must be capable of being programmed with individual timing programs based on their placement within the work zone.

Malfunction Management System (MMS). Equip each TTCS within the signal system with a Malfunction Management System (MMS) that has the ability to communicate with all signals within the signal system. In the event of a fault at any signal within the signal system, that fault must be communicated to every portable traffic signal within the signal system, at which time every portable traffic signal unit must enter into the fault mode.

Conflict Monitoring. When any conflicting channels are detected as concurrently active, the MMS must transfer all portable traffic signals units within the signal system to fault mode.

Multiple Indication Monitoring. The MMS should monitor active signal indications and verify safe and proper operation. If a conflict or potentially unsafe scenario occurs, the MMS must transfer all signals within the system to the fault mode.

Communication Monitoring. When communication between the signal units is lost, the system must enter into the fault mode.

Lack of Indication Monitoring. The signals within the TTCSs must enter into the fault mode when all instances of a signal lamp are lost for more than 1,000 milliseconds, unless one instance of signal indication (at the signal loss location) is active and functioning properly.

Fault Modes. The TTCSs must have the ability to be programmed in a fault mode of flashing red upon a system fault.

Consequences of Failed Performance. Upon any notification of failure of any duration, complete a repair within the maximum allowable 24 hr. without additional cost to the Department or time extension of the Contract. The equipment is also subject to rejection. Any rejected equipment may be offered again for retest provided the noncompliance has been corrected.

# Inspection

When requested by the Engineer, the TS will be subject to a field review by a representative of the MassDOT District Office and/or the Town, which may generate additional comments requiring revisions to the temporary signal.

#### SYSTEM COORDINATOR

The Contractor must designate a System Coordinator who will be responsible for overseeing the placement of the devices and for testing and calibrating the equipment. The System Coordinator must be locally available to maintain system components, move portable devices as necessary, and respond to emergency situations. The System Coordinator's local phone number or toll-free number shall be provided to District Engineer for the maintenance of the system at any time. The System Coordinator must be accessible 7 days a week and 24 hr. a day while the system is deployed and must respond within 2 hr. of notification.

Technical support for the system must be available for periods of operation.

#### METHOD OF MEASUREMENT AND BASIS FOR PAYMENT

The work under Items 816.81 Temporary Traffic Control System will not be measured but paid for at the Contract Lump Sum prices, which prices shall include all labor, materials, equipment and incidental costs to complete the work. This price is full compensation for the TTCS units; signs; portable trailers; setup; furnishing, operating, relocating, adjusting, and removing equipment; replacement parts; maintenance; batteries; fuel; oil; related consumables; programming; an onsite system coordinator; calibration; making the system fully operational; and materials, equipment, labor, tools, and incidentals necessary to complete the work. This price also includes any costs associated with communications (for example, cellular fees); power; and damage from vandalism, weather, or traffic incidents.

Payment of 50% of the Lump Sum bid price of the respective Items, for the location, will be made following the first TS stage modification implemented by the Contractor and accepted by the Engineer.

The remaining 50% of the Lump Sum bid price of the respective Items, for the location, will be paid following the completion of the final stage when the TTCS are no longer required.

# ITEM 991.1 TEMPORARY CONTROL OF WATER LUMP SUM

The work shall include all sandbagging, temporary stream diversion and other measures necessary for sufficient water control to accomplish the demolition of the existing structure and the construction of the proposed structure, in the dry. Furthermore, all water control or dewatering operations shall follow the approved environmental permits included in these bid documents.

Cofferdam type and location shall be determined by the Contractor. Dewatering shall be conducted to ensure that all concrete is placed and cured in the dry. For demolition purposes, dewatering shall be conducted on an as needed basis as determined by the Contractor.

It is the responsibility of the Contractor to determine the need and extent of dewatering required based on their proposed construction methods and to submit methods and materials he/she proposes to use for the Engineer's approval.

All necessary permitting, documents and fees required for all dewatering work shall be the responsibility of the contractor and shall be included in the cost of this item.

#### **Construction Methods:**

Plans and calculations (if applicable) for all cofferdams and other water control measures shall be developed by the Contractor for this Item. These plans and calculations shall be prepared and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts and shall be submitted for the approval of the Engineer prior to the start of construction.

The Contractor shall use such equipment and shall perform their operations in such a manner that boiling or other disturbances of the soil in the foundation area will be prevented and that turbidity is not released into the river or wetland. The area being excavated shall be kept dry by such means that water will be prevented from entering from the adjacent soils and adversely affecting the stability of the foundation material or supporting soils.

All dewatering and related earthwork shall be conducted in such a manner as to prevent siltation or contamination of the waterway.

#### METHODS OF MEASUREMENT AND BASIS OF PAYMENT

There will be no measurement under this item. Payment of 75% of the lump sum bid price of this item will be made upon complete installation in accordance with approved shop drawings. The remaining 25% of the lump sum bid price of this Item will be paid following proper complete removal of all temporary water control measures from the site, as determined by the Engineer.

# ITEM 995.01 PRECAST CONRETE BOX CULVERT, 4'-0" x 5'-0", LUMP SUM HEADWALLS AND WINGWALLS

#### General.

The work under this Heading consists of fabricating, transporting and installing precast concrete box culvert, precast concrete cut-off wall, precast concrete headwall, and precast concrete wingwalls and includes all necessary labor, materials, and equipment to complete the work as shown on the Plans. The work shall conform with the MassDOT Standard, Supplemental, and Interim Specifications and the requirements of the current AASHTO LRFD Bridge Construction Specifications, supplemented by the current relevant provisions of the latest edition of PCI MNL-116 (The Manual for Quality Control for Plants and Production of Precast and Prestressed Concrete Products), except as noted herein.

## **QUALITY ASSURANCE**

#### General.

Quality Assurance includes all the planned and systematic actions necessary to provide confidence that a product or facility will perform satisfactorily in service. It is an all-encompassing term that includes Quality Control (performed by the Fabricator) and Acceptance (performed by Engineer). Quality Control is the system used by the Contractor and Fabricator to monitor and assess their production processes at the plant facility and installation activities at the project site to ensure that the final product will meet the specified level of quality. Acceptance includes all factors used by the Engineer to determine the corresponding value for the product. Engineer Acceptance inspection at the plant facility is intended as a means of evaluation of compliance with contract requirements. Contractor and Fabricator Quality Control activities and Engineer Acceptance activities shall remain independent from one another. Engineer Acceptance activities shall not replace Fabricator Quality Control activities.

#### **Fabricator Quality Control.**

Quality Control shall be performed by the Fabricator to ensure that the product is fabricated in conformance with the specifications herein. The Fabricator shall maintain a Quality Control system to monitor, assess, and adjust placement and fabrication processes to ensure the Precast Concrete Bridge Element(s) meet the specified level of quality, through sufficient Quality Control sampling, testing, inspection, and corrective action (where required). The Fabricator's Quality Control system shall address all key activities during the placement and fabrication and shall be performed in conformance with the Fabricator's NPCA or PCI Certification. Quality Control documentation shall meet the requirements of the Fabricator Quality Control – Documentation section below. Upon request, Fabricator Quality Control documentation shall be provided to the Engineer Plant Inspector.

#### Plant.

Prior to the fabrication of Precast Concrete Bridge Elements, the Fabricator's precast concrete plant shall obtain the following:

- (a) Certification by the National Precast Concrete Association (NPCA) Plant Certification Program or Precast/Prestressed Concrete Institute (PCI) Plant Certification Program, for the applicable types of Precast Concrete Bridge Element(s) being fabricated
- (b) MassDOT Prequalification
- (c) MassDOT Mix Design Approval

All concrete for a given Precast Concrete Bridge Element shall be produced by a single company and plant, unless otherwise approved by the Engineer.

#### Personnel.

The Fabricator shall provide adequate training for all QC personnel in accordance with NPCA or PCI certification. There shall be sufficient personnel trained and certified to perform the tests listed under Subsection M4.02.13, Part D. At a minimum, the Fabricator's Quality Control Personnel shall maintain the following qualifications and certifications:

- (a) QC Manager with an active NETTCP Field Technician or ACI Concrete Field Testing Technician –Grade I certification or higher, and a minimum of 4 years continuous experience in the manufacture of Precast Concrete Bridge Elements for state transportation departments. The QC Manager shall be on site while the batch plant is producing and placing concrete for MassDOT projects.
- (b) A Technician/Inspector having the Precast/Prestressed Concrete Institute (PCI) Technician/Inspector Level I or NorthEast Transportation Training and Certification Program (NETTCP) Precast Concrete Inspector, or higher.

The Contractor shall submit to the Engineer a copy of the Fabricator's Quality Control Personnel required qualifications, as specified above.

#### Laboratory.

The Fabricator shall provide a room of sufficient size to house all equipment and to adequately perform all testing. The room shall have either a separate moisture storage room or curing box for concrete cylinders, and it shall be thermostatically controlled to maintain temperatures consistent with AASHTO T 23. It shall include a desk and file cabinet for proper record keeping, and have good lighting and ventilation. This room shall be kept for testing and quality control and not used for any other purpose. An additional desk and file cabinet shall be provided for exclusive use of the Engineer. No exception from these requirements will be allowed without the express written permission of the Engineer.

#### **Testing Equipment.**

At a minimum, the Fabricator's plant facility shall have the following testing equipment:

- (a) Air Content Meter Type A or B: AASHTO T 152
- (b) Air Content Meter Volumetric Method: AASHTO T 196 (Required for Lightweight Concrete)
- (c) Slump Cone: AASHTO T 119
- (d) Cylinder Molds AASHTO M 205
- (e) Concrete Testing Machine: AASHTO T 22
- (f) Screening Sieve: AASHTO T 27, AASHTO T 11
- (g) Curing Box: AASHTO T 23
- (h) Spread Test Base Plate for Self-Consolidating Concrete (SCC): ASTM C1611
- (i) All other equipment prescribed by AASHTO and ASTM standards for the tests to be performed by the Fabricator as specified

# Inspection.

Quality Control personnel shall monitor and inspect the fabrication of each Precast Concrete Bridge Element. Quality Control personnel shall report all inspection activities on Quality Control Inspection Reports and non-conformances on Non-Conformance Reports (NCRs) throughout the entire fabrication process, as speciefied herein.

#### **Temperature Monitoring.**

At a minimum, the Fabricator shall monitor, record, and report the temperatures of the form, ambient temperatures surrounding the concrete, and temperatures of the concrete continuously, without interruption as specified below:

- Prior to placement of concrete to verify that  $Ti \ge 50^{\circ}F$ .
- Immediately after placement to verify that  $T_i \ge 50^{\circ}F$  is maintained.
- Throughout the entire duration of the curing cycle, at regular intervals not to exceed one hour until 100% Design Strength (f'c) is attained and concrete has cooled to within 40°F of the ambient temperature surrounding the Precast Concrete Bridge Element.

At a minimum, the temperature measuring devices shall record and report the temperature of the concrete to the nearest 2°F. At least two temperature sensors (thermocouples) shall be positioned to record the maximum and minimum anticipated concrete temperatures. The anticipated minimum temperature shall be measured with one or more thermocouples at a distance no greater than 2 inches from the surface of the thinnest section. The anticipated maximum temperature shall be measured with one or more thermocouples at the center of the thickest section. Proposed temperature measurement locations shall be submitted to the Engineer for approval. Temperature recording devices shall be located within the curing enclosure and calibrated as required by PCI MNL-116 Section 4.18.4. Maximum heat increase and cool down rates shall comply with PCI MNL-116, Section 4.19. The Contractor shall furnish temperature logs recorded at a minimum frequency of once per hour to the Inspector as required, with each post-pour QC inspection report.

# Sampling and Testing.

At a minimum, the Fabricator shall perform random Quality Control sampling and testing as specified in *Table 1: Quality Control Sampling and Testing*. The Fabricator shall perform additional Quality Control sampling and testing on concrete that has been retempered with admixtures or hold-back water during fabrication. Test Specimens shall conform to the requirements of Section M4.02.13 of the MassDOT Standard and Supplemental Specifications and AASHTO R 60, with the exception of the Stripping (80% f'c) set of cylinders. Stripping (80% f'c) cylinders shall be cured in the same location and environment as the Precast Bridge Elements they represent. If approved by the Engineer, compressive strength cylinder match curing equipment, that maintains the same concrete conditions that the corresponding Precast Bridge Element is exposed to, may be utilized in lieu of Stripping (80 % f'c) field cured cylinders, with the use of thermocouples, controllers, and heaters.

**Table 1: Quality Control Sampling and Testing** 

			lanty Control Sa				
Quality Characteristic	Test Method	Sample Size	Specification Limit	Lot Size	Sublot Size (d)	Frequenc y	Point of Samplin g
Slump (in.) (a)	AASHT O T 119	Per AASHTO	≤8 in. or as approved by the Engineer				Point of Dischar ge
Air Content (%)	AASHT O T 152	Per AASHTO	5% ≤ % ≤ 8%			One (1) per Sublot or fraction thereof	
Temperature (°F)	AASHT O T 309	Per AASHTO	50°F ≤ °F ≤ 90°F				
Strength (psi)	AASHT O T 22 AASHT O T 23	Stripping Cylinders: One (1) set of Three (3) 4 x 8 in.	≥80% f'c at Stripping	Total Quantity of Concrete			
		7-day Cylinders: One (1) set of Three (3) 4 x 8 in.	For Information at 7 days	c(y) produced on a Contract, per Type of Element fabricated, per Mix Design	20 cy		
		28-day Cylinders: One (1) set of Three (3) 4 x 8 in.	≥ 100% f'c at 28 days				
		56-day Cylinders: One (1) set of Three (3) 4 x 8 in.	≥ 100% f' c at 56 days (b)				

# **Notes:**

- (a) Self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.
- (b) 56-day Compressive Strength test specimens shall require testing only when 28-day Compressive Strength test specimens have failed to meet Design Strength (f'c).
- (c) Lot shall be defined as a specific quantity of material from a single source, produced or placed by the same controlled process.
- (d) Sublot shall be defined as an equal division or part of a Lot from which a sample of material is obtained in order to assess the Quality Characteristics of the Lot.

# Certificate of Compliance.

The Fabricator shall provide a Certificate of Compliance in accordance with Standard Specifications, Division I, Section 6.01, stating that QC test cylinders have achieved the design strength, f'c. A Certificate of Compliance shall accompany each shipment and shall be presented to the Engineer or Owner upon delivery to the site.

#### Documentation.

At a minimum, the Fabricator shall maintain a filing system for the following QC records and documentation. All QC records and documentation shall be made available to the Engineer and Owner upon the request of the Department.

- (a) Current MassDOT Approved Mix Design Sheet(s) and Approval Letter(s)
- (b) PCI or NPCA Certification
- (c) Current Qualifications and Certifications for QC Manager(s) and QC Technician(s)
- (d) Most current set of Approved Shop Drawings
- (e) Approved Placement, Finishing and Curing Plan
- (f) Approved Dunnage Plan
- (g) Fabricator Certificate of Compliance for each fabricated Precast Concrete Bridge Element
- (h) Admixture Manufacturer's Certification of Compliance for each approved Admixture
- (i) Completed QC Inspection Report for each fabricated Precast Concrete Bridge Element
- (i) Identification Number for each fabricated Precast Concrete Bridge Element
- (k) Time and date of casting of each fabricated Precast Concrete Bridge Element
- (1) Date of stripping of each fabricated Precast Concrete Bridge Element
- (m)Batch Ticket Printout reporting the quantity of concrete produced for each batch of concrete produced
- (n) Concrete temperature records for each Precast Concrete Bridge Element fabricated
- (o) QC Test Report Forms for each sublot of concrete produced
- (p) Non-Conformance Reports (NCRs)
- (q) Documentation of Repairs (if applicable)

#### Acceptance.

The Engineer will perform Acceptance inspection, sampling, and testing during fabrication and installation, to evaluate the quality and degree of compliance of the fabricated Precast Concrete Bridge Element to MassDOT specifications. Additionally, the Engineer will monitor the Fabricator's Quality Control activities to ensure the Fabricator is properly administering Quality Control in conformance with the Fabricator's NPCA or PCI Certification. Acceptance inspection and test results not meeting MassDOT specifications will result in Non-conformance Reports (NCR) being issued by MassDOT to the Fabricator or Contractor for corrective action. Final Acceptance for the fabricated Precast Concrete Bridge Elements shall be determined by the Engineer.

### Inspection.

An Inspector will be assigned to perform Acceptance activities during fabrication, which includes the inspection of the materials, work procedures, and Precast Concrete Bridge Elements. At least seven (7) days prior to the scheduled start of fabrication, the Fabricator shall contact the Engineer to provide notice of the scheduled fabrication start date. The Fabricator shall complete the following activites prior to notifying the Engineer of the scheduled start date:

- (a) Receive approval for all submitted Fabricator cement concrete mix designs from the MassDOT Research and Materials Section for the current year, as specified under the *Mix Design* section and *Table 3: Trial Batch Sampling Testing for New Mix Designs*. Self-consolidating concrete shall meet the requirements of M4.02.17.
- (b) Receive approval for the submitted Fabricator Placement, Finishing, and Curing Plan from the Engineer, as specified under the *Placement, Finishing, and Curing Plan* section.
- (c) Receive Engineer of Record approved shop drawings from the Engineer as specified under the *Shop Drawings* section.
- (d) Participate in the pre-production meeting, as described under the *Pre-Production Meeting* section (if required).

Prior to the start of fabrication, the Fabricator shall review the fabrication schedule with the MassDOT Inspector. Fabrication shall only proceed when:

- (a) The QC Inspector and Engineer are present to inspect the Precast Concrete Bridge Element(s) being fabricated.
- (b) The QC Manager is present at the Fabricator's plant.

The Fabricator shall grant access to all required areas of the Fabricator's plant to the Engineer, during the hours of fabrication. Fabrication without Engineer access to required areas is prohibited, and will result in the rejection of the fabricated Precast Concrete Bridge Element(s).

Additionally, the Engineer will monitor the adequacy of the Fabricator's Quality Control activities. The Engineer's Acceptance activities performed at the Fabricator's plant shall remain independent from the Fabricator, and does not replace the Fabricator's required Quality Control activities.

#### Sampling and Testing.

At a minimum, the Engineer will perform random Acceptance sampling and testing for each Sublot of concrete produced as specified in *Table 2: Acceptance Sampling and Testing*. The Engineer will also perform Acceptance sampling and testing on concrete that has been retempered with admixtures or hold-back water during production. Test Specimens will conform to the requirements of Section M4.02.13 of the MassDOT Standard and Supplemental Specifications and AASHTO R 60.

**Table 2: Acceptance Sampling and Testing** 

Quality Characteristic	Test Method	Sample Size	Specification Limit	Lot Size	Sublot Size (d)	Frequenc y	Point of Samplin g
Slump (in.) (a)	AASHT O T 119	Per AASHTO	≤8 in. or as approved by the Engineer				
Air Content (%)	AASHT O T 152	Per AASHTO	5% ≤ % ≤ 8%				
Temperature (°F)	AASHT O T 309	Per AASHTO	50°F ≤ °F ≤ 90°F	Total Quantity		One (1) per Sublot or fraction	Point of Dischar ge
Compressive	AASHT	7-day Cylinders: One (1) set of Three (3) 4 x 8 in. 28-day Cylinders:	For Information at 7 days	of Concrete (cy) produced on a Contract, per Type	per Sublot or		
Strength (psi)  AA	OT22 AASHT OT23	One (1) set of Three (3) 4 x 8 in.	$\geq$ 100% f' c at 28 days	of Element fabricated, per Mix Design			
	56-day Cylinders: One (1) set of Three (3) 4 x 8 in.	≥ 100% f' <sub>c</sub> at 56 days <sup>(b)</sup>	Design				

### **Notes:**

- (a) Self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.
- (b) 56-day Compressive Strength test specimens shall require testing only when 28-day Compressive Strength test specimens have failed to meet Design Strength (f'c).
- (c) Lot shall be defined as a specific quantity of material from a single source, produced or placed by the same controlled process.
- (d) Sublot shall be defined as an equal division or part of a Lot from which a sample of material is obtained in order to assess the Quality Characteristics of the Lot.

### **MATERIALS**

#### Materials.

Materials shall meet the following specifications (if applicable):

General	M4.00.00
Portland Cement	M4.01.0
Blended Hydraulic Cements	M4.01.1
Fly Ash	M4.01.2
Cement Concrete	M4.02.00
Cement	M4.02.01
Cement Mortar	M4.02.15
Aggregates	M4.02.02
Lightweight Aggregates	M4.02.03
Water	M4.02.04
Cement Concrete Additives	M4.02.05
Proportioning	M4.02.06
Mixing and Delivery	M4.02.10
Test Specimens	M4.02.13
Mortar for Filling Keyways	M4.04.0
Slag	AASHTO M 302
High Performance Cement Concrete	M4.06.1
Self-Consolidating Concrete (SCC)	M4.02.17
Controlled Density Fill – Non-Excavatable	M4.08.0
Reinforcing Bars	M8.01.0
Epoxy Coated Reinforcing Bars	M8.01.7
Galvanized Reinforcing Bars	M8.01.8
Welded Wire Reinforcement	M8.01.2
Mechanical Reinforcing Bar Splicer	M8.01.9
Lifting Devices	PCI MNL-116
Corrugated Metal Pipe	AASHTO M 36

### **Cement Concrete Mix Design.**

The cement concrete shall be comprised of specified proportions of water and MassDOT approved aggregates, cement, supplementary cementitious materials (SCMs), and admixtures to form a homogenous composition. Cement concrete for Precast Concrete Bridge Elements shall meet the requirements of M4.06.1 High Performance Cement Concrete, with the exception that the "Total Cementitious Content" specified shall be considered the "Maximum Allowable Cementitious Content". When used, self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.

Prior to production of cement concrete, the Fabricator shall report and submit all proposed mix design formulations and its constituent materials onto the MassDOT Cement Concrete Mix Design Sheet to the Engineer for review and approval. All mix design yields shall be designed for 1.0 cubic yards of concrete, with an allowable tolerance of +/- 1.0 %. All liquids incorporated into the proposed mix design(s) shall include both water and admixtures in the liquid mass calculation.

During production of cement concrete, the Fabricator shall not alter the previously approved mix design formulation or its constituent materials. Proposed alterations in source, type, batch quantity, or gradation to any of the constituent materials of the previously approved mix design formulation shall require a new MassDOT Mix Design Sheet submission to the Engineer for review and approval. Fabrication shall not occur without prior MassDOT mix design approval.

The Fabricator shall notify the Engineer to schedule trial batch testing for the new mix design(s). Trial batch testing shall meet the following requirements:

- (a) Performed by a qualified laboratory and/or AASHTO accredited laboratory.
- (b) Performed and/or sampled in the presence of a MassDOT Inspector.
- (c) Meet the requirements as specified in *Table 3: Trial Batch Sampling Testing for New Mix Designs*. Self-consolidating concrete (SCC) shall meet M4.02.17.

Failure to perform all of the required trial batch testing or provide MassDOT RMS trial batch test results within the Specification Limits (as specified in Table 3) will result in the disqualification of the Fabricator's proposed mix design(s).

Table 3: Trial Batch Sampling and Testing for New Mix Designs

Quality Characteristic	Test Method	Sample Size	Specification Limit	Performed By
Slump (a)	AASHTO T 119	Per AASHTO	Max. 8 inches or as approved by the Engineer	Quality Control
Air Content (AC)	AASHTO T 152	Per AASHTO	$5\% \le AC \le 8\%$	Quality Control
Temperature (°F)	AASHTO T 309	Per AASHTO	50°F ≤ °F ≤ 90°F	Quality Control
Compressive Strength (b)	AASHTO T 22 AASHTO T 23	28-day Cylinders: One (1) set of Three (3) 4 x 8 in.	Lab Mixed $f_{cr} = 1.3$ $f_{c}$ at 28 days Batch Mixed $f_{cr} = 1.2$ $f_{c}$ at 28 days	MassDOT
Alkali-Silica Reaction (ASR)	ASTM C 1567	Per ASTM	M4.02.00	Quality Control
Resistance to Chloride Ion Penetration Chloride Ion Penetration (e)	AASHTO T 358 <sup>(f)</sup>	28-day Cylinders: One (1) set of Three (3) 4 x 8 in.	Resistivity $\geq 21 \text{ k}\Omega$ - cm at 28 days	MassDOT
Freeze/Thaw Durability (c)	AASHTO T 161 (Procedure A)	Per AASHTO	Relative Dynamic Modulus of Elasticity after 300 cycles ≥ 80%	Quality Control

#### Notes:

- (a) Self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.
- (b) Trial batch compressive strength testing shall be performed by MassDOT. Laboratory mixed trial batch compressive strength results shall achieve 130% Design Strength (f'c). Batch-mixed trial batch compressive results shall achieve 120% f'c. Acceptance will be based on compressive strength testing performed by MassDOT.
- (c) If an AASHTO accredited laboratory is preparing the trial batch test specimens, MassDOT Acceptance presence is not required. If the Fabricator is preparing the trial batch test specimens, MassDOT Acceptance presence is required during trial batch test specimen preparation.
- (d) Alkali Silica Reaction (ASR) testing shall meet the requirements of M4.02.00. Independent laboratories performing ASR testing shall be listed on the MassDOT Quality Construction Materials List (QCML).
- (e) Calcium nitrite shall be removed from mix designs containing the admixture and replaced by an equivalent quantity of water when preparing Chloride Ion Penetration resistance trial batch test specimens.
- (f) The Wenner probe tip spacing "a" shall be 1.5.

## **Vertical Adjustment Assembly.**

Vertical Adjustment Assembly details and material requirements shall be as shown on the plans. Alternate devices may be used provided that they are adjustable and can support the anticipated loads. The design of the leveling devices, with necessary calculations, shall be submitted to the Engineer of Record for approval.

#### Grout.

Grout used for shear keys, vertical adjustment assembly voids, and hand holes shall be in accordance with M4.04.0.

#### Reinforcement.

All reinforcing steel shall be coated Grade 60 unless otherwise noted on the plans. Mechanical reinforcing bar splicers shall be epoxy coated.

#### Threaded Inserts.

Threaded inserts are permissible to facilitate forming the keyway pours. Threaded inserts shall be hot dip galvanized or made of stainless steel. The number of threaded inserts shall be minimized, and the inserts shall not come in contact with the reinforcing steel.

#### **Corrugated Metal Pipe.**

Corrugated Metal Pipe to be used for forming voids as specified on the plans shall be fabricated from steel and shall have a protective metallic coating of zinc (galvanizing).

### CONSTRUCTION METHODS – PLANT FABRICATION

### **Shop Drawings.**

Prior to performing any work under this Section, the Contractor shall receive approval for all shop drawings for the Precast Concrete Bridge Element being worked on and any special Contract requirements, provided that a complete shop drawing package is provided. The Contractor shall not order materials or begin work before receiving approved shop drawings. The Engineer will reject Precast Concrete Bridge Elements that deviate from the approved drawings or are fabricated prior to receiving written approval of the shop drawings. The Contractor shall bear full responsibility and costs for all materials ordered or work performed prior to the approval of the shop drawings or written authorization from the Engineer.

Contractor shall submit scaled shop drawings to the Engineer of Record for review and approval. Upon approval, the Engineer of Record will forward two (2) sets of scaled, full size (minimum 24x36") paper copies of the Approved (or Approved As Noted) shop drawings to the MassDOT Director of Research and Materials. Calculations are not to be included in any submittal to the Research and Materials Section. An approval stamp shall appear on every shop drawing sheet. Wet-stamping or wet-signing is not required, provided that the stamp and reviewer name are legible. The Fabricator's name and address shall appear on each sheet.

Resubmittal of "Approved as Noted" shop drawings is not necessary for minor revisions, provided that the correction can be clearly understood and is unambiguous without possibility of misinterpretation. Shop drawings with questions or comments that require a response and/or additional information from the Fabricator must be resubmitted.

Detailed shop drawings shall be prepared in accordance with the relevant provisions of Subsection 5.02 and shall, at a minimum, contain the following:

- (a) Number and type and/or piece mark of the precast concrete bridge element including overall length, width and height.
- (b) Skew angle.
- (c) Location, size and geometry of all steel reinforcement, including mechanical reinforcing bar splicers to be used for connecting Precast Concrete Bridge Elements together in the field.
- (d) Location and details of all inserts, anchors, Vertical Adjustment Assemblies, and any other items required to be cast into the Precast Concrete Bridge Elements (whether detailed on the plans by the Engineer of Record or provided for the Contractor's convenience). Precast Concrete Bridge Elements shall not be fired or drilled into for attachment purposes. All hardware shall be galvanized except as noted.
- (e) Locations and details of the lifting devices, including supporting calculations, type and amount of any additional reinforcing required for lifting. The Fabricator shall design all lifting devices based on the no cracking criteria in Chapter 8 of the PCI Design Handbook (7<sup>th</sup> edition).
- (f) The minimum compressive strength required prior to handling the precast concrete bridge element.

The shop drawings shall not include procedures for placement, finishing, and curing of concrete. These details shall be included in the Placement, Finishing and Curing Plan that is to be submitted to the Engineer as described under *Placement*, *Finishing*, *and Curing Plan*.

#### Fabrication.

All Precast Concrete Bridge Elements shall be fabricated in accordance with the latest edition of PCI MNL-116 as modified herein.

### Placement, Finishing and Curing Plan.

At least 30 days prior to start of fabrication, the Contractor shall submit the Fabricator's proposed Placement, Finishing and Curing Plan to the Engineer for approval by MassDOT Research and Materials Section. This shall be an independent submittal, separate from the fabrication shop drawings. The Placement, Finishing and Curing Plan shall include the following:

- Method of Mixing
- Method of Placement
- Method of Consolidation
- Method of Finishing
- Method of Initial Curing
- Method of Intermediate Curing
- Method of Final Curing
- Moisture Retention Materials and Equipment (water spray equipment, saturated covers, sheet materials, liquid membrane-forming compounds, accelerated curing equipment, etc.)
- Cylinder Curing Methods, Location, and Environmental Control (temperature, humidity, etc.)
- Temperature Monitoring, Recording, and Reporting

### **Dunnage Plan Shop Drawings.**

At least 30 days prior to the start of fabrication, the Contractor shall submit proposed Dunnage Plan Shop Drawings to the Engineer of Record for review and approval. This shall be an independent submittal, separate from the fabrication shop drawings. Upon approval, the Engineer of Record will forward two (2) sets of scaled, full size (minimum 24"x36") paper copies of the Approved (or Approved As Noted) Dunnage Plan to the MassDOT Director of Research and Materials. Calculations are not to be included in any submittal to the Research and Materials Section. The Dunnage Plan shall include the following:

- (a) Proposed layout of the Precast Concrete Bridge Elements for storage in yard and during shipping
- (b) Support and blocking point locations
- (c) Support and blocking materials

#### **Box Culverts**

The Contractor shall submit design computations for the box culvert to the Engineer for review and approval. The computations shall be prepared in accordance with the latest AASHTO LRFD Bridge Design Specifications, the 2024 MassDOT LRFD Bridge Design Manual, and the Plans using English units and HL-93 live loading. The design computations shall consider all Strength, Extreme Event and Service Limit States as are appropriate for each stage of fabrication, shipment, construction, and for the final in-service condition. Design computations and shop drawings shall be prepared and stamped by a Professional Engineer licensed to practice in the Commonwealth of Massachusetts. The shop drawings shall be prepared and submitted in accordance with the section, Drawings, above.

The box culvert dimensions provided on the plans are shown to establish the size of the proposed opening. The width and thickness of each box culvert unit may vary depending upon the manufacturer's specifications provided that the opening size is maintained. The Contractor shall be responsible for modifying the dimensions of the bridge elements to compensate for elastic shortening, shrinkage, grade corrections, and other phenomena that make in-process fabricating dimensions different from those shown on the drawings. Approval of the shop drawings shall not relieve the Contractor from responsibility for the correctness of the dimensions shown.

## Wingwalls

The Contractor shall submit design computations for the wingwalls to the Engineer for review and approval. The computations shall be prepared in accordance with the latest AASHTO LRFD Bridge Design Specifications, the 2024 MassDOT LRFD Bridge Design Manual, and the Plans using English units and HL-93 live loading. The design computations shall consider all Strength, Extreme Event and Service Limit States as are appropriate for each stage of fabrication, shipment, construction, and for the final in-service condition. Design computations and shop drawings shall be prepared and stamped by a Professional Engineer licensed to practice in the Commonwealth of Massachusetts. The shop drawings shall be prepared and submitted in accordance with the section, Drawings, above.

### Joints.

The precast reinforced concrete box culvert shall be produced with grout-filled keyways per the details on the plans, the manufacturer's recommendations, and as approved by the Engineer. The ends shall be manufactured such that when the sections are laid together they will make a continuous line of culvert sections with a smooth interior surface free of appreciable irregularities, and in compliance with the permissible variations.

### Marking.

The following information shall be clearly marked on the interior of each culvert by indentation, waterproof paint, or other approved means:

- (a) Box culvert span and rise
- (b) Date of manufacture and lot number
- (c) Name and trademark of the manufacturer

### **Pre-Production Meeting.**

The Contractor shall notify the MassDOT Research and Materials Section to determine if a preproduction meeting will be required to review the specification, shop drawings, curing plan, schedule, and discuss any specific requirements. The meeting shall be held prior to scheduling a MassDOT Inspector (refer to Section *Quality Assurance – Precast Concrete, C. Acceptance, A. Inspection*), and at least seven (7) days prior to the scheduled casting of any Precast Concrete Bridge Element or control section. The Contractor shall schedule the meeting, which shall include representatives of the Fabricator and MassDOT.

#### Reinforcement.

The reinforcing bars shall be installed in accordance with Section 901.62 of the Supplemental Specifications, including tolerances for cover and horizontal spacing of bars. Components of mechanical reinforcing bar splicers shall be set with the tolerances shown on the plans. The reinforcing bars and mechanical reinforcing bar splicers shall be assembled into a rigid cage that will maintain its shape in the form and which will not allow individual reinforcing bars to move during the placement of concrete. This cage shall be secured in the form so that the clearances to all faces of the concrete, as shown on the plans, shall be maintained.

Where reinforcing bars are to protrude from one Precast Concrete Bridge Element in order to mate with reinforcing bar splicers in a second precast concrete element, the fabricator shall set the reinforcing bars and the reinforcing bar splicers with a template in order to ensure proper fit up within the tolerances specified on the plans.

### Tolerances.

Fabrication shall comply with tolerances specified on the plans. Tolerances for steel reinforcement placement shall be in accordance with 901.62. In the absence of specifications on the plans, tolerances shall comply with the latest version of the PCI MNL 135, Precast Tolerance Manual.

#### Forms.

Concrete shall be cast in rigidly constructed forms, which will maintain the Precast Concrete Bridge Elements within specified tolerances to the shapes, lines and dimensions shown on the approved fabrication drawings. Forms shall be constructed from flat, smooth, non-absorbent material and shall be sufficiently tight to prevent the leakage of the plastic concrete. When wood forms are used, all faces in contact with the concrete shall be laminated or coated with a non-absorbent material. All worn or damaged forms, which cause irregularities on the concrete surface or damage to the concrete during form removal, shall be repaired or replaced before being reused. Any defects or damage of more than "Category 2, Minor Defects" made to the concrete, due to form work, stripping or handling, shall be subject to repair or rejection, as defined in the *Repairs and Replacement* section. If threaded inserts are cast into the elements for support of formwork, the inserts shall be recessed a minimum of 1 inch and shall be plugged after use with a grout of the same color as that of the precast cement concrete.

### **Mixing of Concrete.**

The concrete shall be proportioned and mixed in conformance with the Fabricator's MassDOT approved mix design and M4.02.10 Mixing and Delivery Fabrication shall not occur without prior MassDOT mix design approval. The Fabricator shall provide copies of batch tickets to the MassDOT Plant Inspector. The MassDOT Plant Inspector will verify if the batch ticket quantities are within the tolerances of the Fabricator's MassDOT approved mix design.

#### Placement of Concrete.

Prior to the placement of concrete, the temperature of the forms shall be greater than or equal to 50°F. Quality Control inspection shall be performed by the Fabricator as specified in the *Fabricator Quality Control* section. Placement of the concrete shall not proceed until the MassDOT Plant Inspector is present to perform inspection and begin monitoring Fabricator Quality Control inspection activities, and is in compliance with specifications. The MassDOT Plant Inspector shall inspect and accept the placement of the reinforcing steel prior to the placement of concrete into the forms. The Fabricator shall verify all materials and equipment required for protecting and curing the concrete are readily available and meet the requirements of the *Final Curing Methods* section below. All items encased in the concrete shall be accurately placed in the position shown on the Plans and firmly held during the placing and setting of the concrete. Clearance from the forms shall be maintained by supports, spacers, or hangers and shall be of approved shape and dimension.

During placement, the concrete shall maintain a concrete temperature range between 50°F and 90°F. The Fabricator shall minimize the time to concrete placement (measured from start of mixing to completion of placement). In no event shall time to placement exceed 90 minutes. The Fabricator shall perform additional Quality Control sampling and testing on concrete that has been retempered with admixtures or hold-back water during the placement of the concrete as specified in the *Fabricator Quality Control* section above. Delays or shutdowns of over 30 minutes shall not be allowed during the continuous filling of individual forms.

#### **Consolidation of Concrete.**

Suitable means shall be used for placing concrete to prevent segregation or displacement of reinforcing steel or forms. The concrete shall be thoroughly consolidated by external or internal vibrators or a combination of both. Vibrators shall not be used to move concrete within the forms. Vibrators shall be used as specified in 901.63C and as directed by the Engineer. Concrete shall be placed and consolidated in a way that minimizes the presence of surface voids or bug holes on the formed surfaces. When used, self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.

### **Finishing of Concrete.**

The finish of the Precast Concrete Bridge Elements shall be as indicated on the plans. Where Precast Concrete Bridge Elements have keyways for grout or closure pours, the surfaces of these shear keys shall be abrasive blasted prior to shipment. The Fabricator may utilize a surface retarder with water blast, sandblast, or a combination of both to achieve the desired keyway finish. At a minimum, the profile of the keyway surfaces shall be similar to that of 60 grit sand paper. The exposed reinforcing steel in the precast slab shall be protected from damage during the cleaning of the keyways. Damaged epoxy coating of steel reinforcement shall be repaired, and the reinforcing steel shall be cleaned as directed by the Engineer.

The Fabricator shall permanently mark each precast concrete bridge element with its type and/or piece mark, date of casting, and supplier identification either by stamp markings in fresh concrete, waterproof paint, or other approved means on a surface that will not be exposed after assembly.

### **Exposed Surfaces of Precast Concrete Bridge Elements.**

As soon as conditions permit, before the concrete has fully hardened, all dirt, laitance, and loose aggregate shall be removed from the exposed concrete surfaces. Contractor shall not allow foot traffic on the uncured concrete until it has reached sufficient strength to prevent damage.

## **Exposed Surfaces of Closure Pour Shear Keys.**

The closure pour shear key cast in the sides of the beam flanges shall have an exposed aggregate finish. The closure pour reinforcing steel and its coating shall not be damaged by the process for creating the exposed aggregate surface. Fabricator may utilize a surface retarder with water blast, abrasive blast, or a combination of both to achieve the desired shear key finish. The abrasive blast shall use oil free compressed air. The profile of the shear key surfaces shall be similar to that of 60 grit sand paper.

## **Initial Curing Methods.**

After the placement of concrete and prior to concrete finishing, the Fabricator shall initiate initial curing methods when the concrete surface begins to dry, to reduce moisture loss from the surface. Application of one or more of the following initial curing methods shall occur immediately after the bleed water sheen has disappeared.

## Fogging.

Fogging nozzles shall atomize water into a fog-like mist. The fog spray shall be directed and remain visibly suspended above the concrete surface, to increase the humidity of the air and reduce the rate of evaporation. Water from fogging shall not be worked into the surface during finishing operations and shall be removed or allowed to evaporate prior to finishing.

## **Liquid-applied Evaporation Reducers**

Evaporation reducers shall be sprayed onto the freshly placed concrete surface to produce an effective monomolecular film that reduces the risk of plastic-shrinkage cracking and rate of evaporation of the bleed water from the concrete surface. Evaporation reducers shall be applied in accordance with manufacturer's recommendations.

#### **Intermediate Curing Methods.**

The Fabricator shall initiate intermediate curing methods if concrete finishing has taken place prior to the concrete reaching final set. The freshly finished concrete surface shall be protected from moisture loss, by the continuation of initial curing methods (fogging and evaporation reducers) until final curing methods are applied or by the use of liquid membrane-forming curing compounds (see *Liquid Membrane-Forming Compounds for Curing* section).

### **Final Curing Methods.**

The Fabricator shall initiate and apply final curing methods to the concrete immediately after the following conditions are met:

- (a) Completion of concrete finishing
- (b) Final set of concrete
- (c) Concrete has hardened sufficiently enough to prevent surface damage

## <u>ITEM 995.01</u> (Continued)

During fabrication of Precast Concrete Bridge Elements, the Fabricator shall maintain the required concrete temperature ranges throughout the entire duration of the final curing method cycle as specified herein. Controlled and gradual termination of the final curing method shall occur after all specified conditions are met. The concrete temperature shall be reduced at a rate not to exceed 36°F per hour until the concrete temperature is within 20°F of the ambient temperature outside of the final curing method enclosure. The Fabricator shall maintain a minimum concrete temperature of 40°F until 100% f'c is attained (see Handling and Storage section below).

## Water Spray Curing.

All exposed concrete surfaces shall remain moist with a continuous fine spray of water throughout the entire duration of the final curing method cycle (see *Table 4: Final Curing Method Cycle for Water Spray*).

Final Curing

Duration

Method Cycle

 $\geq$  Five (5) days

Compressive

Strength

 $> 80\% f_c$ 

Table 4: Final Curing Method Cycle for Water Spray

## **Saturated Covers for Curing.**

**Sustained Concrete** 

 $50^{\circ}F < {^{\circ}F} < 90^{\circ}F$ 

Temperature

All exposed concrete surfaces shall remain moist with a continuous application of saturated covers throughout the entire duration of the final curing method cycle (see Table 5: Final Curing Method Cycle for Saturated Covers). Saturated covers shall be allowed to dry thoroughly before removal to provide uniform, slow drying of the concrete surface.

**Table 5: Final Curing Method Cycle for Saturated Covers** 

Sustained Concrete Temperature	Final Curing Method Cycle Duration	Compressive Strength
$50^{\circ}\text{F} \le {^{\circ}\text{F}} \le 90^{\circ}\text{F}$	$\geq$ Three (3) days	$\geq$ 80% f'c

Saturated covers, such as burlap, cotton mats, and other coverings of absorbent materials shall meet the requirements of AASHTO M 182, Class 3. Saturated covers shall be in good condition, free from holes, tears, or other defects that would render it unsuitable for curing concrete. Saturated covers shall be dried to prevent mildew when storing. Prior to application, saturated covers shall be thoroughly rinsed in water and free of harmful substances that are deleterious or cause discoloration to the concrete. Saturated covers shall have sufficient thickness and proper positioning onto the concrete surface to maximize moisture retention.

Saturated covers shall contain a sufficient amount of moisture to prevent moisture loss from the surface of the concrete. Saturated covers shall be kept continuously moist so that a film of water remains on the concrete surface throughout the entire duration of the final curing method cycle. The Fabricator shall not permit the saturated covers to dry and absorb water from the concrete. Use of polyethylene film (see Polyethylene Film section) may be applied over the saturated cover to potentially decrease the need for continuous watering.

## **Sheet Materials for Curing.**

All exposed concrete surfaces shall remain moist with a continuous application of curing sheet materials throughout the entire duration of the final curing method cycle (see *Table 6: Final Curing Method Cycle for Curing Sheet Materials*).

**Table 6: Final Curing Method Cycle for Sheet Materials** 

Sustained Concrete Temperature	Final Curing Method Cycle Duration	Compressive Strength
50°F ≤ °F ≤ 90°F	$\geq$ Three (3) days	≥80% f°c

Sheet Materials used for curing, such as polyethylene film, white burlap-polyethylene sheeting, and reinforced paper shall meet the requirements of ASTM C171 and the specifications herein. Sheet materials shall inhibit moisture loss and reduce temperature rise in concrete exposed to radiation from the sun during the final curing method cycle. Adjoining covers shall overlap not less than 12 inches. All edges of the covers shall be secured to maintain a moist environment.

## Polyethylene Film.

Polyethylene film shall meet the requirements of ASTM C171, consist of a single sheet manufactured from polyethylene resins, be free of visible defects, and have a uniform appearance. Careful considerations shall be taken by the Fabricator to prevent the film from tearing during storage and application, so as to not disrupt the continuity of the film (polyethylene film reinforced with glass or other fibers is more durable and less likely to be torn). The Fabricator shall monitor the application of the film to prevent uneven spots from appearing (mottling) on the concrete surface, due to variations in temperature, moisture content, or both. The Fabricator shall prevent mottling from occurring on the concrete surface by applying additional water under the film or applying a combination of polyethylene film bonded to absorbent fabric to the concrete surface to retain and evenly distribute the moisture.

Immediately following final finishing, polyethylene film shall be placed over the surface of the fresh concrete surface, so as to not damage the surface of the concrete and shall be placed and weighted so that it remains in contact with the concrete throughout the entire duration of the final curing method cycle. The film shall extend beyond the edges of the concrete surface. The film shall be placed flat on the concrete surface, avoiding wrinkles, to minimize mottling. Edges of adjacent polyethylene film shall overlap a minimum of 6 inches and be tightly sealed with the use of sand, wood planks, pressure-sensitive tape, mastic, or glue to maintain close contact with the concrete surface, retain moisture, and prevent the formation of air pockets throughout the entire duration of the final curing method cycle.

### White Burlap-Polyethylene Sheeting

White burlap-polyethylene sheeting shall meet the requirements of ASTM C171, be securely bonded to the burlap so to avoid separation of the materials during handling and curing of the concrete, and be applied in the same manner as the polyethylene film.

## **Reinforced Impervious Paper.**

Reinforced impervious paper shall meet the requirements of ASTM C171, consist of two sheets of kraft paper cemented together with a bituminous adhesive and reinforced with embedded cords or strands of fiber running in both directions, and be white in color. Reinforced impervious paper shall be treated to prevent tearing when wetted and dried.

Reinforced impervious paper can be reused so long as it is effective in retaining moisture on the concrete surface. The Fabricator shall visually inspect the reinforced impervious paper for all holes, tears, and pin holes from deterioration of the paper through repeated use by holding the paper up to the light. The paper shall be discarded and prohibited from use when the moisture is no longer retained.

After the concrete has hardened sufficiently to prevent surface damage, the concrete surface shall be thoroughly wetted prior to the application of the reinforced impervious paper, and be applied in the same manner as the polyethylene film.

## Liquid Membrane-Forming Compounds for Curing.

All exposed concrete surfaces shall remain moist with a continuous application of liquid membrane-forming compounds throughout the entire duration of the final curing method cycle (see *Table 7: Final Curing Method Cycle for Liquid Membrane-Forming Compounds*).

Table 7: Final Curing Method Cycle for Liquid Membrane-Forming Compounds

Sustained Concrete Temperature	Final Curing Method Cycle Duration	Compressive Strength
50°F ≤ °F ≤ 90°F	≥ Seven (7) days	≥80% f'c

Liquid membrane-forming compounds shall meet the requirements of ASTM C 1315, Type I, Class A and shall exhibit specific properties, such as alkali resistance, acid resistance, adhesion-promoting quality, and resistance to degradation by ultraviolet light, in addition to moisture-retention capabilities. Liquid membrane-forming compounds shall consist of waxes, resins, chlorinated rubber, or other materials to reduce evaporation of moisture from concrete. Liquid membrane-forming compounds shall be applied in accordance with the manufacturer's recommendations.

Liquid membrane-forming compounds shall be applied immediately after the disappearance of the surface water sheen following final finishing. All exposed surfaces shall be wetted immediately after form removal and kept moist to prevent absorption of the compound, allowing the curing membrane to remain on the concrete surface for proper membrane moisture retention. The concrete shall reach a uniformly damp appearance with no free water on the surface prior to the application of the compound.

If patching or finishing repairs are to be performed prior to the application of the compound, the Precast Concrete Bridge Element shall be covered temporarily with saturated covers until the repairs are completed and the compound is applied. Only areas being repaired shall be uncovered during this period. While the saturated covers are removed to facilitate the patching process, the work shall continue uninterrupted. If for any reason the work is interrupted, saturated covers shall be placed onto the uncovered concrete surface, until the work continues and is completed, at which time the curing compound shall be applied to the repaired area.

Careful considerations shall be made by the Fabricator to determine if the evaporation rate is exceeding the rate of bleeding, thus causing the surface to appear dry even though bleeding is still occurring. Under such conditions, the application of liquid membrane-forming compounds to the concrete surface shall be delayed, in order to prevent bleed water from being sealed below the concrete surface and avert map cracking of the membrane films, reduction in moisture-retention capability, and reapplication of the compound. To diagnose and prevent this condition, the Fabricator shall place a transparent plastic sheet over a test area of the uncured and unfinished concrete surface and shall determine if any bleed water accumulates under the plastic.

The compound shall be applied in two applications at right angles to each other to ensure uniform and more complete coverage. On very deeply textured surfaces, the surface area to be treated shall be at least twice the surface area of a troweled or floated surface. In such cases, two separate applications may be needed, each at 200 ft²/gal., with the first being allowed to become tacky before the second is applied.

The curing compound shall be applied by power sprayers, using appropriate wands and nozzles with pressures between 25 and 100 psi. For very small areas such as repairs, the compound shall be applied with a wide, soft-bristled brush or paint roller. The compound shall be stirred or agitated before use and applied uniformly in accordance with the manufacturer's recommended rate. The Fabricator shall verify the application rates are in accordance with the manufacturer's recommended rate.

When the concrete surface is to receive paint, finishes, or toppings that require positive bond to the concrete, it is critical that the curing procedures and subsequent coatings, finishes, or toppings be compatible to achieve the necessary bond

After the termination of the final curing method cycle has occured, liquid membrane-forming compounds shall be removed by blast-cleaning from any concrete surface that is to receive paint, finishes, plastic concrete from secondary pour, grout, or any other toppings that require bonding to the concrete surface. These surfaces shall be further blast-cleaned to remove the cement matrix down to exposed aggregate to ensure proper bonding to the material. The method used to remove the curing compound shall not damage the reinforcement and coating. Compounds are prohibited on any concrete surface that will have a penetrating or coating type treatment such as a sealer, stain, or waterproofing membrane applied to it.

### **Accelerated Curing.**

Accelerated curing shall use live steam or radiant heat with moisture in accordance with PCI MNL-116 as modified herein. The concrete temperature shall meet the maximum heat increase and cool down rates as specified herein. Concrete temperature monitoring shall meet the requirements of the *Temperature Monitoring* section. Excessive and fluctuating rates of heating and cooling shall be prohibited. The concrete temperature shall not exceed 158°F at any time. The Fabricator shall meet the following accelerated curing sequencing and requirements.

### **Initial Delay Period.**

The initial delay period shall be defined as the duration immediately following the placement of the concrete and the attainment of initial set of the concrete. The Fabricator shall determine the time of initial set in accordance with AASHTO T 197 specifications. Throughout the entire duration of the preset period, initial curing shall be implemented. The temperature increase period (see *Temperature Increase Period* section) shall not occur until initial set of the concrete is attained. During the initial delay period, the concrete temperature shall meet the following requirements.

- i. Concrete temperature rate of increase shall not exceed 10°F per hour.
- ii. Total concrete temperature increase shall not exceed 40°F higher than the placement concrete temperature or 100°F, whichever is less

### **Temperature Increase Period.**

The temperature increase period shall be defined as the duration immediately following the completion of the initial delay period (after initial set) and immediately prior to the start of the constant maximum temperature period. Application of steam to the enclosure shall not occur until the initial delay period is complete. After the initial delay period is complete, all exposed concrete surfaces shall be cured in a moist environment where the concrete temperature increases at a rate not to exceed 36°F per hour.

### **Constant Maximum Temperature Period.**

The constant maximum temperature period shall be defined as the duration immediately following the completion of the temperature increase period and immediately prior to the start of the temperature decrease period. After the temperature increase period is complete, all exposed concrete surfaces shall be cured in a moist environment at a controlled and constant elevated temperature throughout the entire duration of the constant maximum temperature period and the start of the termination decrease period shall occur after all specified conditions are met (see *Table 8: Constant Maximum Temperature Period*).

**Table 8: Constant Maximum Temperature Period** 

Sustained Concrete Temperature	Constant Maximum Temperature Period	Compressive Strength
$120^{\circ}\text{F} \le {}^{\circ}\text{F} \le 158^{\circ}\text{F}$	$6 \text{ hrs} \leq \text{Time} \leq 48 \text{ hrs}$	≥80% f'c

### **Temperature Decrease Period.**

After the constant maximum temperature period is complete, the concrete temperature shall be cured in a moist environment at a controlled and reduced rate not to exceed 36°F per hour until the concrete temperature is within 20°F of the ambient temperature outside of the curing enclosure.

### Stripping.

The Fabricator shall not strip forms or handle the Precast Concrete Bridge Element until Quality Control compressive strength cylinders attain a minimum compressive strength of 80% Design Strength (f'c) or the value indicated on the approved drawings has been achieved. After removal from the form, all exposed concrete surfaces shall continue to be cured in conformance with the *Final Curing Methods* sections until completion.

### Handling and Storage of Precast Concrete Bridge Elements.

Precast Concrete Bridge Elements may be exposed to temperatures below freezing (32°F) when the chosen curing cycle has been completed, provided that the following conditions are met:

(a) Precast Concrete Bridge Elements are protected from precipitation with polyethylene curing covers until 100% f'c is attained

(b) Precast Concrete Bridge Elements maintain a minimum concrete temperature of 40°F until 100% f'c is attained

Precast Concrete Bridge Elements damaged during handling and storage will be repaired or replaced at the Engineer's direction at no cost to the Owner. Precast Concrete Bridge Elements shall be lifted at the designated points by approved lifting devices embedded in the concrete and in accordance with proper lifting and handling procedures. Storage areas shall be smooth and well compacted to prevent damage due to differential settlement. Precast Concrete Bridge Elements shall be supported on the ground by means of continuous blocking, in accordance with the approved dunnage plan.

Precast Concrete Bridge Elements shall be loaded on a trailer with blocking as described above, in accordance with the approved dunnage plan. Shock-absorbing cushioning material shall be used at all bearing points during transportation of the Precast Concrete Bridge Elements. Blocking shall be provided at all locations of tie-down straps. Precast Concrete Bridge Elements stored prior to shipment shall be inspected by the Contractor prior to being delivered to the site to identify damage that would be cause for repair or rejection.

### Repairs and Replacement.

In the event defects are identified, they shall be classified in the following categories and a non-conformance report (NCR) shall be filed if required. The NCR shall be submitted to MassDOT for review. Defects in all categories shall be documented by plant Quality Control personnel and made available to MassDOT upon request. Any required repairs shall utilize materials listed on the MassDOT QCML.

Where noted, defects shall be repaired according to the PCI Northeast Region Guidelines for Resolution of Non-Conformances in Precast Concrete Bridge Elements, Report Number PCINE-18-RNPCBE. Please note that reference to PCINE-18-RNPCBE is made for repair details only. In the case of conflicts with this Special Provision, this Special Provision shall govern.

### **Category 1, Surface Defects.**

Category 1 defects do not need to be repaired, and an NCR does not need to be filed. Surface defects are defined as the following:

- (a) Surface voids or bug holes that are less than 5/8-inch in diameter and less than ½-inch deep, except when classified as Category 4
- (b) Cracks less than or equal to 0.006 inches wide
- (c) Cracks less than or equal to 0.125 inches wide on surfaces that will receive a field-cast concrete overlay

### **Category 2, Minor Defects.**

Category 2 defects shall be repaired, but an NCR does not need to be filed. Minor defects are defined as the following:

- (a) Spalls, honeycombing, surface voids that are less than 2 inches deep and have no dimension greater than 12 inches
- (b) Cracks less than or equal to 0.016 inches that will not receive a concrete overlay

(c) Broken or spalled corners that will be covered by field-cast concrete

Minor defects shall be repaired according to PCINE-18-RNPCBE. Cracks shall be sealed according to the PCI Repair Procedure #14 in PCINE-18-RNPCBE.

### Category 3, Major Defects.

For Category 3 defects, the Fabricator shall prepare an NCR that documents the defect and describes the proposed repair procedure. The NCR shall be submitted to MassDOT for approval prior to performing the repair. Major defects are defined as the following:

- (a) Spalls, honeycombing and surface voids that are deeper than 2 inches or have any dimension greater than 12 inches, when measured along a straight line
- (b) Concentrated area of defects consisting of four or more Category 2 Defects within a 4-square foot area.
- (c) Exposed reinforcing steel
- (d) Cracks greater than 0.016 inches and less than or equal to 0.060 inches in width that will not receive a concrete overlay
- (e) Bearing area spalls with dimensions not exceeding 3 inches
- (f) Cracks, spalls and honeycombing that will be encased in cast in place concrete need not be repaired, but the limits and location of the defects shall be documented with an NCR

Upon MassDOT approval, defects and cracks shall be repaired according to PCINE-18-RNPCBE and this specification. All repairs shall be completed at the expense of the Contractor.

### Category 4, Rejectable Defects.

Rejectable defects as determined by the MassDOT Inspector, RMS, and Engineer may be cause for rejection. Fabricator may submit an NCR with a proposed repair procedure, requesting approval. Some rejectable defects are defined as the following:

- (a) Surface defects on more than 5% of the surface area which will be exposed to view after installation
- (b) Minor defects that in total make up more than 5% of the surface area of the unit
- (c) Cracks greater than 0.060 inches in width except as noted in Category 1
- (d) Elements fabricated outside of the specified tolerances
- (e) MassDOT compressive strength testing that does not meet the specified Design Strength, f'c

### Loading.

Prior to the Fabricator loading the Precast Bridge Element on to the truck for shipping, the Fabricator shall provide the MassDOT Plant Inspector and RMS a minimum seven (7) days' notice of the Fabricator's intent to load the Precast Bridge Element. Inspection by the MassDOT Plant Inspector shall take place while the element is still on dunnage in the yard. The element shall not be loaded onto the truck until the MassDOT Plant Inspector has performed the inspection.

## Shipping.

Prior to shipment, the Fabricator shall perform the following actions and provide the required documentation to the MassDOT Plant Inspector:

- (a) Precast Concrete Bridge Elements shall remain at the Fabricator's plant for a minimum of 7 days after cast date.
- (b) QC Inspection Reports shall be signed by the Quality Control Manager and provided to the MassDOT Plant Inspector.
- (c) QC Compressive Strength Test Report Forms attaining Design Strength, f'c for the Precast Concrete Bridge Element's representative Sublot shall be generated by the Fabricator and provided to the MassDOT Plant Inspector.
- (d) Certificate of Compliance shall be generated by the Fabricator as described under the Fabricator Quality Control section and provided to the MassDOT Plant Inspector.
- (e) All MassDOT RMS approved Corrective Actions submitted on the Non-Conformance Reports (NCR), shall be verified to have been completed by the MassDOT Plant Inspector and Quality Control Manager.
- (f) All NCRs shall be signed off by the Quality Control Manager, MassDOT Inspector and MassDOT RMS.

### Delivery.

Upon Delivery, the following documentation shall be provided to the MassDOT Resident Engineer or designee:

- (a) QC Compressive Strength Test Report Forms attaining Design Strength, f'c for the Precast Concrete Bridge Element's representative sublot.
- (b) Certificate of Compliance generated by the Fabricator as described under the Fabricator Quality Control section.
- (c) QC Inspection Reports signed by the Quality Control Manager.

The Contractor shall inspect Precast Concrete Bridge Elements upon receipt at the site. Precast Concrete Bridge Elements damaged during delivery shall be repaired or replaced at the Engineer's direction at no cost to the Owner.

#### CONSTRUCTION METHODS – FIELD CONSTRUCTION

#### General.

All of the Contractor's field personnel involved in the erection and assembly of the Precast Concrete Bridge Elements shall have knowledge of and follow the approved Erection Procedure and Quality Control Plan for Precast Concrete Bridge Element Assembly.

Prior to installation, the following documentation shall be reviewed and confirmed by the Engineer or designee:

- (a) QC Compressive Strength Test Report Forms attaining Design Strength, f'c for the Precast Concrete Bridge Element's representative sublot.
- (b) Certificate of Compliance generated by the Fabricator as described under the Fabricator Quality Control section.
- (c) QC Inspection Reports signed by the Quality Control Manager.

Field construction staff shall verify that the Engineer has accepted all Precast Concrete Bridge Elements prior to installation.

## Erection Procedure and Quality Control Plan for Precast Concrete Bridge Element Assembly.

Prior to the erection, the Contractor shall submit an Erection Procedure and a Quality Control Plan for Precast Concrete Bridge Element Assembly for approval by the Engineer. This submittal shall include computations and drawings for the transport, hoisting, erection and handling of the Precast Concrete Bridge Elements. The Erection Procedure and Quality Control Plan for Precast Concrete Bridge Element Assembly shall be prepared and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts with working knowledge of the Contractor's equipment, approved shop drawings, and materials to build the bridge. The Erection Procedure and Quality Control Plan for Precast Concrete Bridge Element Assembly shall, at a minimum, include the following:

#### **Erection Procedure**

The Erection Procedure shall be prepared to conform to the requirements of 960.61, Erection and the applicable sections in Chapter 8 of the PCI Design Handbook (seventh edition) for handling, erection, and bracing requirements. At a minimum, the Erection Procedure shall provide:

- (a) Minimum concrete compressive strength for handling the Precast Concrete Bridge Elements.
- (b) Concrete stresses during handling, transport, and erection.
- (c) Crane capacities, pick radii, sling geometry, and lifting hardware.
- (d) Verification that the equipment can handle all pick loads and weights with the required factor of safety.
- (e) Evaluation of construction sequence and evaluation of any geometric conflicts in the lifting of the Precast Concrete Bridge Elements and setting them as shown on the plans.
- (f) Design of crane supports including verification of subgrade for support.
- (g) Location and design of all temporary bracing that will be required during erection.

Non-shrink grout and concrete materials, approved by the Engineer, shall be placed as shown on the plans. Fill joints, keyways, and voids, in strict accordance with the specifications and manufacturer's recommendations and instructions.

For footings, approach slabs and highway guardrail transitions, once these Precast Concrete Bridge Elements have been set to the correct horizontal and vertical alignment, the void between them and the supporting soil shall be filled with Controlled Density Fill – Non-Excavatable to the limits as shown on the plans. Add additional grout ports in the footings to facilitate the bedding process if required.

Joints shall be filled flush to the top with non-shrink grout, and any vertical misalignment between adjacent elements shall be feathered out on a slope of 1 to 12.

Curing of grout or concrete shall be performed in strict accordance with the specifications and manufacturer's recommendations. Filling shall not be completed in cold weather when either the ambient temperature or the precast member's temperature is below the manufacturer's recommendation. No localized heating of either the precast members or of the air surrounding the element will be permitted in an attempt to reach application temperatures.

If the joints or voids are not filled within five days after the Precast Bridge Elements are erected, the Contractor shall cover and protect the openings from weather and debris until they are filled.

### **Quality Control Plan for Precast Concrete Bridge Element Assembly**

The Quality Control Plan for Precast Concrete Bridge Element Assembly is a document prepared and submitted by the Contractor prior to the start of work which requires the Contractor to identify and detail the sequence of construction in accordance with the project schedule and which clearly identifies all stages of field construction. The assembly procedures for the Precast Concrete Bridge Elements shall be submitted on full size 24"x36" sheets. This document will be treated as a Construction Procedure and will be reviewed by both the Designer and the District Construction Office. The approval of this document will serve as a guideline for setting interim concrete and grout strengths and curing procedures to allow construction to proceed without waiting for the final in-service strengths to be achieved.

The following list details the minimum criteria that should be included in the Quality Control Plan for Precast Concrete Bridge Element Assembly:

- (a) A detailed schedule showing the sequence of operations that the Contractor will follow. The schedule shall include a timeline for installation of all major elements of the bridge accounting for the installation of temporary works and cure times of grouts or closure pour concrete and other selected materials.
- (b) Calculations that support the schedule outlined above should be included verifying that the selected materials have adequate interim strength to proceed from one step to another. Final material strengths are not normally required until the bridge is opened to vehicular traffic. The minimum factor of safety of two (2) will be required for the interim strength of grouts and closure pour concrete before construction is allowed to proceed to subsequent steps. The factor of safety is applied to the service loads that are supported by the elements and materials during various stages of construction. For example, if the Contractor calculates that the grout between the precast pier cap and pier wall requires a strength of 100 psi to support the dead load of the beams in the next step, a cylinder break of 200 psi will be required prior to allowing the pier cap to be loaded with the beams. The required strength of materials for subsequent construction stages shall also be calculated and the material strength verified.

- (c) The Contractor is responsible for determining the center of gravity for all elements. Special care shall be used for unusual elements that are not symmetric. These elements may require special lifting hardware to allow for installation in a plumb or flat position.
- (d) Plan of the work area, depicting items such as temporary earth support, utilities within the immediate vicinity of the work, drainage structures, etc. The Contractor shall coordinate the various subcontractors that will need to occupy the same area and shall ensure that there are no conflicts. For example, if the Contractor is having different Subcontractors prepare and submit plans for temporary earth support and demolition, and the earth support is required to be installed prior to the demolition, it shall be the Contractor's responsibility to ensure that the Quality Control Plan for Precast Concrete Bridge Element Assembly submission allows both operations to be performed without field modification.
- (e) Details of all equipment that shall be employed for the construction of the bridge.
- (f) Methods of providing temporary support of the elements. Include methods of adjusting and securing the element after placement.
- (g) Vertical Adjustment Assemblies to be used as a means of setting precast concrete footings to the correct elevations.
- (h) Procedures for controlling the overall horizontal dimensions and the vertical elevations as each precast concrete bridge element is erected by using the tolerance limits of the joints as detailed on the plans.
- (i) Methods for curing grout.
- (j) Proposed methods for installing non-shrink grout and the sequence and equipment for the grouting operation.
- (k) Methods for sealing the keyways in preparation for filling with non-shrink grout, including the use of backer rods. The Contractor shall not assume that the backer rods will restrain the pressure from the grout in vertical grout joints. Provide additional forming to retain the backer rod.

### Survey and Layout.

Working points, working lines, and benchmark elevations shall be established prior to placement of all elements. The Contractor is responsible for field survey as necessary to complete the work. MassDOT reserves the right to perform additional independent survey. If discrepancies are found, the Contractor may be required to verify previous survey data.

#### **Preparation of Closure Pour Keyways.**

Immediately prior to erecting the Precast Concrete Bridge Elements, the closure pour shear keys shall be cleaned at the job site of all dust, dirt, carbonation, laitance, and other potentially detrimental materials which may interfere with the bonding of the closure pour concrete and precast concrete using a high-pressure water blast. The exposed reinforcing steel in the precast concrete shall be protected from damage during the cleaning of the keyways. Damaged epoxy coating of steel reinforcement shall be repaired, and the reinforcing steel shall be cleaned as directed by the Engineer. The surfaces of the shear keys shall be wetted so that the surfaces shall have a Saturated Surface Dry (SSD) condition for at least 24 hours prior to the placement of the closure pour concrete.

#### Erection.

The elements shall be placed in the sequence and according to the methods outlined in the Erection Procedure and Quality Control Plan for Precast Concrete Bridge Element Assembly. As the erection proceeds, the Contractor shall constantly monitor the assembly to ensure that the precast concrete bridge element is within proper horizontal and vertical location and tolerances prior to releasing it from the crane and setting the next unit. The Contractor may use shims to maintain proper setting tolerances.

The concrete elements shall be lifted only by the lifting devices, and the utmost care shall be taken to prevent distortion of the elements during handling, transportation or storage.

Suitable spreaders shall be used during lifting so that only a vertical pull will be made on the lifting device. A non-vertical lifting force may be permitted if prior written approval is given by the Engineer. This approval will be contingent on the Contractor demonstrating by calculations, prepared by a Professional Engineer registered in Massachusetts, that the elements will not be damaged by the non-vertical lifting force and by documentation that the capacity of the lifting devices is adequate for the non-vertical lifting force.

Precast components shall be pre-bed with non-shrink grout thicker than shim stacks prior to placing other precast elements on top of them.

After all Precast Concrete Bridge Elements have been placed, the actual overall dimensions of the structure both horizontal and vertical, as laid out shall not deviate from the nominal dimensions shown on the plans beyond a tolerance of +0 inches and -1 inches. Once the layout of Precast Concrete Bridge Elements has been accepted by the Engineer, the Contractor shall cut all lifting devices off below the surfaces of the elements.

#### **Box Culverts**

Backfilling operations shall not begin until the following checks have been made:

- (a) The culvert to footing key joints are grouted as shown on the plans;
- (b) The joints between exterior culvert bridge elements and wingwall stems are complete as shown on the plans;
- (c) All joint seals are properly placed.

Backfill shall be paid for under separate items. The backfilling procedures shall be in accordance with Sections 120, 150, and 170 of the Standard Specifications and Supplemental Specifications modified as follows:

- (a) Fill shall be placed and compacted in layers not exceeding one foot in depth;
- (b) Dumping of fill shall not be allowed any nearer to the structure than 3.25 feet from a vertical plane extending from the back of the footing;
- (c) Backfill shall be placed as symmetrically as possible around the structure with differential depths of backfill on each side of the structure not exceeding 1.5 feet with respect to each other;
- (d) Compaction shall be achieved using hand compaction equipment for all fill within one foot of the structure;
- (e) The bare structure shall not be crossed by any equipment heavier than that specified by the culvert manufacturer. All damage resulting from equipment damage shall be rectified to the satisfaction of the Engineer at no cost to the Department;
- (f) Construction equipment will not be permitted atop an uncompleted structure;

- (g) Construction equipment whose weight exceeds the design capacity shall not be permitted atop the completed structure under any circumstances;
- (h) The use of vibratory rollers for compaction purposes will not be permitted.

A representative of the manufacturer shall be on site at the commencement of the installation, at no cost to the Department, to assist the Contractor. The representative shall offer advisory assistance only and shall not supplant the Contractor's representative, or the Engineer.

## Filling of Blockouts for Lifting Devices and Threaded inserts.

If the blockouts in the Precast Concrete Bridge Elements where the lifting devices were located will be exposed and visible after assembly is complete, the Contractor shall fill these blockouts with Cement Mortar (M4.02.15) or grout.

After the formwork has been removed, all threaded inserts that have been cast into the precast concrete bridge deck for support of the formwork shall be filled with a grout of the same color as that of the precast concrete.

#### **COMPENSATION**

### A. Basis of Payment.

The furnishing, fabricating, and erecting of all Precast Concrete Bridge Elements for the structure shall be paid for at the contract unit price LUMP SUM, complete in place.

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## **B.** Payment Items.

Precast Concrete Box Culvert, 4'-0" x 5'-0", Headwalls and Wingwalls

#### **SECTION 02240**

### **DEWATERING**

### PART 1 - GENERAL

### 1.01 WORK INCLUDED:

This section specifies designing, furnishing, installing, maintaining, operating and removing temporary dewatering systems as required to lower and control water levels and hydrostatic pressures during construction; disposing of pumped water; constructing, maintaining, observing and, except where indicated or required to remain in place, removing of equipment and instrumentation for control of the system.

#### 1.02 RELATED WORK:

- A. Section 00890, PERMITS
- B. Section 01570, ENVIRONMENTAL PROTECTION
- C. Section 02252, SUPPORT OF EXCAVATION

#### 1.03 SYSTEM DESCRIPTION:

A. Dewatering includes lowering the water table and intercepting seepage which would otherwise emerge from the slopes or bottom of the excavation; increasing the stability of excavated slopes; preventing loss of material from beneath the slopes or bottom of the excavation; reducing lateral loads on sheeting and bracing; improving the excavation and hauling characteristics of sandy soil; preventing rupture or heaving of the bottom of any excavation; and disposing of pumped water.

### 1.04 QUALITY ASSURANCE:

- A. The Contractor is responsible for the adequacy of the dewatering systems.
- B. The dewatering systems shall be capable of effectively reducing the hydrostatic pressure and lowering the groundwater levels to a minimum of 2 feet below excavation bottom, unless otherwise required by the Engineer, so that all excavation bottoms are firm and dry.
- C. The dewatering system shall be capable of maintaining a dry and stable subgrade until the structures, pipes and appurtenances to be built therein have been completed to the extent that they will not be floated or otherwise damaged.
- D. The dewatering system and excavation support (see Section 02252, SUPPORT OF EXCAVATION) shall be designed so that lowering of the groundwater level outside the excavation does not adversely affect adjacent structures, utilities or wells.

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### 1.05 SUBMITTALS:

A. In accordance with Section 01330, Contractor shall submit a plan indicating how it intends to control the discharge from any dewatering operations on the project, whether it is discharge of groundwater from excavations or stormwater runoff during the life of the project.

## PART 2 - PRODUCTS: NOT APPLICABLE

### **PART 3 - EXECUTION**

#### 3.01 DEWATERING OPERATIONS:

- A. All water pumped or drained from the work shall be disposed of in a manner that will not result in undue interference with other work or damage to adjacent properties, pavements and other surfaces, buildings, structures and utilities. Suitable temporary pipes, flumes or channels shall be provided for water that may flow along or across the site of the work. All disposal of pumped water shall conform to the provisions of Section 01570 ENVIRONMENTAL PROTECTION and Section 00890 PERMITS.
- B. Dewatering facilities shall be located where they will not interfere with utilities and construction work to be done by others.
- C. Dewatering procedures to be used shall be as described below:
  - 1. Crushed stone shall encapsulate the suction end of the pump to aid in minimizing the amount of silt discharged.
  - 2. For dewatering operations with relatively minor flows, pump discharges shall be directed into straw bale sedimentation traps lined with filter fabric. Water is to be filtered through the straw bales and filter fabric prior to being allowed to seep out into its natural watercourse.
  - 3. For dewatering operations with larger flows, pump discharges shall be into a steel dewatering basin. Steel baffle plates shall be used to slow water velocities to increase the contact time and allow adequate settlement of sediment prior to discharge into waterways.
  - 4. Where indicated on the contract drawings or in conditions of excess silt suspended in the discharge water, silt control bags shall be utilized in catch basins.
- D. The Contractor shall be responsible for repair of any damage caused by its dewatering operations, at no cost to the Owner.

#### END OF SECTION

#### **SECTION 02252**

### TEMPORARY SUPPORT OF EXCAVATION

### PART 1 - GENERAL

#### 1.01 SUMMARY:

- A. This section includes requirements for the temporary support of excavations (SOE). This work includes soldier pile and lagging (SPL) wall or similar for support of excavations. Other approved methods of excavation support system installation may be determined as acceptable after submittals by the Contractor have been reviewed, for informational purposes only, by the Owner's Engineer. The requirements of this section shall also apply, as appropriate, to any methods of excavation support and underpinning which the Contractor elects to use to complete the work.
- B. The Contractor shall design, furnish, place, maintain, and remove (as applicable) such shoring, tiebacks and bracing at locations necessary to support the sides of excavations to prevent danger to persons or damage to adjacent pavements, facilities, utilities, or structures; to prevent injurious caving or erosion or the loss of ground; and to coordinate these support systems with Site construction activities and maintain pedestrian and vehicular traffic as required by the Contract Documents, the Contractor's sequence of construction, and as required by the Owner's Engineer.
- C. In all shoring and bracing operations, care shall be taken to prevent collapse of excavations, injury to persons or damage to adjacent structures, facilities, utilities and services. Any injuries to persons shall be the responsibility of the Contractor; and any damage to the work occurring as a result of settlement, water or earth pressure, or other causes due to inadequate bracing or other construction operations of the Contractor shall be satisfactorily repaired and made good by the Contractor, at no additional expense to the Owner.
- D. Vibration monitoring shall be provided during installation and extraction of sheeting whenever the braced excavation is adjacent to existing structures, in critical areas as noted in the contract documents, or as requested by the Engineer.
- E. The Contractor shall provide survey and layout for the installation of temporary excavation support systems.
- F. The Contractor shall develop and implement measures to limit the movement of temporary excavation support systems, the surrounding ground, street, sidewalks, utilities, tunnels, and other structures. The Contractor shall mitigate and abate movements caused by Contractor's construction activities by developing and implementing remedial measures (as necessary) at no cost to the Owner.

G. Temporary excavation support systems shall be designed and installed in accordance with OSHA excavation safety standards and other applicable federal, state, and local safety regulations and requirements.

### 1.02 SITE CONDITIONS:

- A. Refer to Section 00320 SUBSURFACE DATA for information on site and subsurface conditions.
- B. A geotechnical report titled "Geotechnical Engineering Report, Proposed Culvert Replacement of Salisbury Street Culvert, Worcester, Massachusetts" dated December 5, 2022, has been prepared for this Project and is included in the Appendix for information only. Contractor shall review the subsurface conditions presented in the report for information as discussed in Section 02300 EARTHWORK.
- C. The Contractor is advised that existingstructures and materials may present obstructions to the installation of lateral support systems and other construction. The Contractor is responsible for coordination of removal of obstructions and clearing the lateral support system alignment (as required) prior to installation.
- D. The Contractor shall be aware that support of excavation systems will be located in close proximity to tunnels sensitive to movement. No vibratory or impact hammers shall be used to install the excavation support system. Piles shall be drilled, not driven. Other approved methods of excavation support system installation may be determined as acceptable after submittals by the Contractor have been submitted and reviewed, for informational purposes only, by the Owner's Engineer.
- E. Provide vibration, movement and crack gauge monitoring and associated action plan as stated in Section 02495 to prevent impacts on adjacent structures and utilities. The Contractor shall employ any and all measures necessary to maintain noise levels at or below levels established in any applicable documents, regulatory requirements or agreements prepared by the Owner.
- F. The Contractor shall provide professional engineering services needed to assume engineering responsibility, including preparation of Shop Drawings and a comprehensive engineering analysis. Design the excavation support system to support earth pressures, hydrostatic pressures, traffic loads (as applicable) and any adjacent structure surcharge loads, utility loads, equipment and construction loads.

#### 1.03 RELATED WORK:

- A. Related Documents and Sections: Examine Contract Documents for requirements that directly affect or are affected by the Work of this Section. A list of those Documents and Sections include, but is not limited to, the following:
  - 1. Drawings and general provisions of the Contract
  - 2. Section 00320 SUBSURFACE DATA
  - 3. Section 02240 DEWATERING

### 1.04 QUALITY CONTROL:

- A. This project is subject to the Safety and Health regulations of the U.S. Department of Labor set forth in 29 CFR, Part 1926, and to the Massachusetts Department of Safety and Department of Labor, Division of Occupational Safety "Excavation & Trench Safety Regulation (520 CMR 14.00)" and "Rules and Regulations for the Prevention of Accidents in Construction Operations (454 CMR 10.0 et seq.)." Contractors shall be familiar with the requirements of these regulations.
- B. The Contractor is responsible for the adequacy of the excavation support system and shall retain the services of a Professional Civil Engineer registered in Commonwealth of Massachusetts to design the required excavation support systems. The Contractor's Professional Engineer shall practice in a discipline applicable to excavation work, shall have experience in the design of excavation support systems and shall design in conformance with OSHA requirements. The Contractor's Professional Engineer shall provide sufficient on-site inspection and supervision to assure that the excavation support system is installed and functions in accordance with its design. The criteria listed herein defining the responsibilities of the Contractor's Professional Engineer are the minimum requirements.
- C. The Contractor shall monitor the performance of the excavation lateral support systems and the movement of streets, pavements, utilities, tunnels, buildings and other structures in accordance with Section 02495, Geotechnical Instrumentation. The Contractor shall be responsible for making prompt and continuous evaluations of the geotechnical instrumentation monitoring data, and whenever necessary, shall take immediate remedial measures required to prevent damage or excessive movements.

### 1.05 DESIGN AND PERFORMANCE CRITERIA:

A. Design the excavation support system to support earth pressures, unrelieved hydrostatic pressures, HS20-44 traffic loads (as applicable) and any adjacent structure surcharge loads, utility loads, stockpile, equipment and construction loads. Each component of the temporary excavation systems shall be designed to safely support the maximum combination of loads and other conditions that can occur during construction. HS20-44 load shall be as set forth by the latest edition of AASHTO Standard Specification for Highway Bridges. The Contractor shall verify latest edition of the AASHTO manual is being used for design.

- B. The length of the temporary support walls, as determined by the Contractor, shall provide vertical stability and lateral stability based on its design calculations and review of subsurface conditions. The Contractor shall deepen the walls during construction as necessary should subsurface conditions differ from those assumed in the Contractor's design.
- C. The Owner's Engineer will perform a review of the Contractor's calculations as part of the requirements in Section 1.07B, Shop Drawings and provide comments relative to the requirements of this specification, applicable codes, design assumptions. However, the Owner's Engineer will not accept shared design responsibility for Contractor's design and these Quality Assurance reviews will not relieve the Contractor and their Designer for errors and omissions and the performance of the support of excavation systems.
- D. All intermediate stages of loading as well as final conditions shall be considered. Where the excavation support system will be constructed adjacent to the new foundation, the support system shall consider any required over-excavation of the existing subgrade required for the subsequent replacement with Structural Fill.
- E. Design temporary excavation support system shall withstand an additional 2 feet of excavation below proposed bottom of excavation without redesign except for the addition of lagging and/or bracing.
- F. Consult official records of existing utilities, both surface and subsurface, and their connections to be fully informed on all 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. Expose them by hand excavation or by other methods acceptable to the utility owner. Protect existing utilities to remain within and adjacent to the work area in accordance with the requirements of authorities having jurisdiction over same. The Contractor is responsible for any damage to utilities caused by the Contractor's operations and shall restore them to equal or better operation at no additional cost to the Owner.
- G. The Contractor shall maintain the maximum cumulative horizontal movement at any point along temporary excavation support walls to less than the Limiting Value of 1.5 inch.
- H. Vibrations and movement at adjacent sidewalks, utilities, tunnels, and other structures shall be designed not to exceed the threshold values stated in Section 02495 Geotechnical Instrumentation.
- I. Preload internal braces to 50 percent of the design maximum brace load.
- J. Tiebacks (if required) shall be designed according to the design life of the excavation support system as shall consider any applicable long-term corrosion or the relaxation of strands or tendon if they are to remain in place.

## 1.06 REFERENCES:

The following standards form a part of this specification as referenced herein.

# 1. ASTM International (ASTM)

ASTM	A6	Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling
ASTM	A36	Standard Specification for Carbon Structural Steel
ASTM	A328	Standard Specification for Steel Sheet Piling
ASTM	A416	Standard Specification for Low-Relaxation, Seven-Wire Steel Strand for Prestressed Concrete
ASTM	A563	Standard Specification for Carbon and Alloy Steel Nuts
ASTM	A586	Standard Specification for Metallic-Coated Parallel and Helical Steel Wire Structural Strand
ASTM	A615	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
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 Environment
ASTM	A722	Standard Specification for High-Strength Steel Bars for Prestressed Concrete
ASTM	C150	Standard Specification for Portland Cement
ASTM	C33	Standard Specification for Concrete Aggregates
ASTM	F432	Standard Specification for Roof and Rock Bolts and Accessories.
ASTM	F436	Standard Specification for Hardened Steel Washers.

<sup>2.</sup> Commonwealth of Massachusetts Department of Transportation (MassDOT) Standard Specification for Highways and Bridges.

#### 1.07 SUBMITTALS:

- A. Qualification Data: For Designer and Installer.
  - 1. Submit the following qualifications three weeks prior to the construction:
    - a. Qualifications of Contractor's temporary excavation support system Designer as specified below.
    - b. Qualifications of Contractor's temporary excavation support system Installer as specified below.
    - c. The Contractor's Professional Engineer shall have a minimum of 5 years' experience in the design and performance of temporary excavation support systems similar to those required for this project and have completed a minimum of five projects with similar specialty work. The Contractor shall employ supervising personnel and labor with a minimum of 5 years direct experience for each specialty work item.
- B. Shop Drawings: Not less than 3 weeks prior to start of excavation lateral support system construction. Shop Drawings shall:
  - 1. be prepared by or under the supervision of a qualified professional engineer and be signed and sealed by the qualified professional engineer licensed in the Commonwealth of Massachusetts responsible for their preparation.
  - 2. detail proposed temporary excavation support system(s), details, location, layout, depths, extent of different types of support relative to existing features and the permanent structures to be constructed, and methods and sequence of installation and removal.
  - 3. indicate on the Drawings the actual locations of existing pavements, utilities, foundations, tunnels or other underground elements in relation to the proposed construction.
  - 4. show estimated vibrations (in inches per second) that will be generated during wall installation to buildings and other adjacent critical structures.
  - 5. provide engineering calculations, assumptions, and methodologies for the design of temporary excavation support systems considering all intermediate construction stages, the final construction stage, the Contractor's construction dewatering system, and the site surcharges. The design shall consider, and indicate as necessary, the proposed methods for excavating and constructing and below-grade structure or other permanent feature. The design calculations shall include:
    - a. Estimates of the lateral and vertical displacements of the excavation lateral support system and a list of all design assumptions, including safety factors used for the temporary excavation support system(s) and all lateral pressures used for each system.
    - b. Wall elevation drawings for each side of the excavation indicating locations of wall sections, brace or tieback elements, and any temporary penetrations of bracing through the permanent structure, and the relationship of these elements to the permanent structure and existing site improvements outside the excavation (e.g., manholes, utilities, etc.).

- c. Details of brace elements, including locations, layouts, sizes, and connections of all members. The location of bracing members shall not interfere with the construction of the below-grade permanent structure and other structural features and shall permit access for their removal.
- d. Tieback details, including locations, layout, and material technical specifications. A work plan for tieback verification and proof testing shall be included.
- e. provide a detailed narrative outlining the construction sequence (i.e., installation and removal (as applicable) of the temporary excavation support system elements, and excavation for below-grade structures and/or construction of permanent structural elements. The narrative shall break down the wall and brace or tieback installation, construction surcharge, mass excavation, permanent below-grade structure construction, brace or tieback removal, foundation drain and waterproofing installations, and backfilling.
- 6. Minimum lateral distance from the edge of the excavation support system for use for vehicles, construction equipment, and stockpiled construction and excavated materials.
- 7. List of equipment used for installing the excavation support systems.
- C. Perform preparatory work to discover, protect, maintain, relocate and restore utility facilities. Revise and submit shop drawings to show actual locations of existing and relocated utilities in relation to the excavation lateral support system. Indicate design and methods of construction to overcome interferences with such utilities and excavation lateral support systems proposed.
- D. Construction Contingency Plan specifying the methods and procedures to maintain excavation support system stability if the allowable movement of the adjacent ground and adjacent structures is exceeded, or other unacceptable movement are occurring in the judgement of the Owner's Engineer.
- E. For excavation support systems left in place, submit the following as-built information prior to backfilling and covering the excavation support systems:
  - 1. Survey locations of the temporary excavation support systems, including coordinate of the ends and points of change in direction.
  - 2. Type of temporary excavation support element remaining (e.g., soldier piles remaining, lagging removed).
  - 3. Elevations of top and bottom of the excavation support systems left in place.
- G. Receipt and acceptance of the information by the Owner's Engineer will not relieve the Contractor of the sole responsibility for the adequacy of the excavation support system, and for assuring that there will be no resulting damage to adjacent pavement, utilities or structures, and for providing safe conditions within the supported areas.

### PART 2 - PRODUCTS

### 2.01 MATERIALS:

- A. Where soldier piles and lagging are used, the steel piles shall conform to ASTM A36 or A690, and the lagging shall meet the requirements for timber sheeting, as defined below.
- B. Timber sheeting shall be sound spruce, pine, or hemlock, and either tongue and grooved or splined. Timber sheeting shall not be less than nominal 2-inches thick.

#### C. Tiebacks

- 1. Steel Bars or Rods: ASTM A615/A 615M, Grade 60, threaded steel bars conforming to requirements of ASTM A722 or ASTM F432, as applicable of sizes indicated on approved Shop Drawings. Provide complete with header or face plates conforming to ASTM A36 where required, nuts conforming to ASTM A563, and washers conforming to ASTM F436, as indicated or required.
- 2. Wire Strands: Single-strand or multiple-strand galvanized steel wire conforming to ASTM A416 or ASTM A586 as appropriate.
- 3. Grout: Pumpable concrete with minimum compressive strength at 28 days of 4,000 psi; Aggregate size shall be commensurate with the space being filled.
- D. Lean Concrete: ASTM C150, with a 28-Day Compressive Strength between 75 and 150 psi. As an alternative, Controlled Low Strength Material (CLSM) meeting the requirements of MassDOT Specification Section M4.08.0 may be utilized. However, the 28-Day Compressive Strength shall be between 75 and 150 psi.
- E. Structural Concrete: ASTM C150, with a minimum 28-Day Compressive Strength of 4,000 psi.
- F. Where support of excavation wall is indicated on the drawings or installation is ordered by the Owner's Engineer or required by OSHA standards, the material shall be of such size and strength as required by the excavation support design prepared and submitted by the Contractor's Professional Engineer.
- G. Timber and steel used for bracing shall be of such size and strength as required in the excavation support design prepared and submitted by the Contractor's Professional Engineer. Timber or steel used for bracing shall be new or undamaged used material, which does not contain splices, cutouts, patches, or other alterations, which would impair its integrity or strength.

#### PART 3 - EXECUTION

## 3.01 PREPARATION:

- A. Installation of the temporary excavation support system shall not commence until the Owner's Engineer has reviewed the related earth excavation, dewatering, and geotechnical instrumentation and monitoring submittals with all Owner's Engineers' comments satisfactorily addressed.
- B. Protect structures, utilities, sidewalks, pavements, tunnels and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards that could develop during excavation support and protection system operations.
  - 1. Shore, support, and protect utilities encountered.
- C. Install excavation support and protection systems to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.
  - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner's Engineer and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
- D. Locate excavation support and protection systems clear of permanent construction so that forming and finishing of concrete surfaces is not impeded.
- E. Notify utility owners if existing utilities interfere with the temporary excavation support system. Modify the existing utility with the utility owner's permission or have the utility owner make the modifications at no additional cost to the Owner.
- F. Conduct pre-excavation test pits as necessary to remove obstructions and identify exiting utilities along the alignment of the excavation lateral support system which will interfere with installation.
- G. Inspect excavation support and protection systems daily during excavation progress and for as long as excavation remains open. Promptly correct bulges, breakage, or other evidence of movement to ensure that excavation support and protection systems remain stable.
- H. Promptly repair damage to adjacent facilities caused by installing excavation support and protection systems.

#### 3.02 SOLDIER PILES AND LAGGING:

- A. Install vertical steel soldier piles before starting excavation at element spacings and design depths indicated on the reviewed shop drawings. Install soldier piles in holes drilled full depth with temporary casing. Driving by impact or vibratory hammers will not be allowed. Drilled methods shall prevent loss of ground around the hole.
- B. Each soldier pile shall be installed in its drilled hole within 2 hours after drilling is completed to the required depth. Install piling in plumb position such that each installed pile is in line with adjacent piles over its entire length. Piles shall be installed in a drilled hole and held in place during backfilling.
- C. The Contractor shall have equipment on-site capable to advance the drilled hole, for installation of the soldier piles, through sand below the water table, through concrete, and through large boulders and other obstructions which may be encountered.
- D. Space soldier piles at regular intervals not to exceed allowable flexural strength of lagging. Accurately align exposed faces of flanges to vary not more than 2-inches from a horizontal line and not more than 1:120 out of vertical alignment.
- E. Within the same day of seating the soldier piles in the drilled holes, encase the piles with Structural Concrete to the excavation depth. If alternate encasement material below the excavation zone is proposed by the Contractor, the axial load carrying capacity of the embedded portion of vertical wall elements (below the base of the excavation) shall be evaluated. The wall shall be designed to resist vertical loads including vertical anchor forces, the weight of the lagging and the vertical wall elements. Relying on transfer of vertical load into the soil behind the wall by friction shall not be permitted, unless approved by the Owner's Engineer.
- F. Backfill with Lean Concrete or CDF above the excavation elevations to the currently existing ground surface. Crushed stone or other granular materials are not acceptable.
- G. Prior to completion of the final backfilling operations, soldier piles shall be cut off 4 feet below the final ground surface unless otherwise required by the Owner's Engineer.
- H. Install wood lagging within flanges of soldier piles as excavation proceeds in a manner that will prevent loss of soil. Trim excavation as required to install lagging. The sheeting/lagging shall be sufficiently tight to minimize any resulting lowering of the groundwater level outside the excavation, as required in Section 02240, DEWATERING. As installation progresses, backpack the voids between the excavation face with sand and on-site soils to establish a tight contact. Pack louver openings between lagging with hay or other porous material to allow free drainage of groundwater without loss of retained soil or backpacking. In no case shall the louvered openings be allowed to exceed 1-inch.

- I. Beginning at the top of the soldier piles, the maximum permissible height of unlagged face of excavation shall not exceed 2-feet in all soil types encountered at the site. If water is flowing from the face of the excavation, or if soil to be retained moves toward the excavation, the maximum height of unlagged face shall not exceed 8-inches.
- J. If unstable ground is encountered, take suitable measures (grouting behind the lagging or other approved method) to retain the material in place and prevent loss of ground or movements, which may cause damage to adjacent structures or utilities.

### 3.03 SUPPORT SYSTEMS WITH BRACING AND TIEBACKS:

A. Requirements: Provide walers, struts, rakers and tiebacks (as necessary) to support excavation faces retained by soldier piles or alternate support of excavation systems.

## B. Internal Bracing:

- 1. Provide walers where required, at each level of bracing. As the excavation proceeds, place walers on the open face of the support system wall. Wedge, drypack, and otherwise provide tight bearing between walers and support system wall, with ample bearing areas to provide uniform transfer of loads.
- 2. Provide struts with intermediate bracing as needed to enable struts to carry the design load without distortion or buckling.
- 3. Provide diagonal bracing, as needed, for stability of the system.
- 4. Include web stiffeners, plates, angles, or bracing as needed to prevent rotation, crippling, or buckling of connections and points of bearing between structural members. Allow for eccentricities caused by field fabrication and assembly.
- 5. Install and maintain internal bracing support members in tight contact with each other and with the surface being supported.
- 6. Design internal bracing support members for maximum loads which may occur during excavation and removal stages.

### C. Tiebacks:

- 1. Provide tieback anchorage system as required in accordance with Shop Drawings approved by the Owner's Engineer.
- 2. Tiebacks shall not extend the vertical projection of beyond Site boundaries.
- 3. Install manufactured tiebacks or anchorage systems in accordance with the manufacturer's instructions.
- 4. Install tiebacks to proof loads indicated on Shop Drawings approved by the Owner's Engineer.
- 5. Apply proof loads as herein specified, and provide means to measure each load application within an accuracy of plus or minus five percent using measuring and testing equipment with a valid calibration within the last one year (subject to review by the Owner's Engineer)
- 6. After load test approval, reduce the tieback proof load to the design load, and encase tieback anchorage and bars or rods in grout, lean concrete, or compacted backfill,

as indicated, maintaining the design load until tiebacks are fixed in place. Provide a method of fixation that will transmit the load loss to not more than five percent of the design load in the transfer of load from the jacks to the support system.

# D. Proof Loading:

- 1. Perform proof loading of internal bracing members and tiebacks, including struts and similar members. The Contractor shall use procedures that will produce uniform loading on bracing members and tiebacks without inducing eccentricities or overstressing and distortion.
- 2. Perform and accomplish proof loading by approved load testing and jacking procedures. Submit Shop Drawings of proposed load testing and jacking procedures.
- 3. Apply proof loads as soon as possible after bracing and tiebacks are installed in accordance with methods, procedures, and sequences as indicated on approved Shop Drawings.
- 4. Coordinate excavation work with installation of bracing and tiebacks and with the application of proof loading. Provide steel shims and wedges, welded or bolted in place, to help maintain the proof loading force on the bracing and tiebacks after release of load testing procedures.

# E. Creep Load Testing:

- 1. Load test tiebacks for creep at each level of support in the excavation, at the first installation on each side on the excavation, at horizontal intervals not exceeding 200 feet, and wherever a significant change occurs in the soil in which the tiebacks are anchored.
- 2. Perform a 24-hour load test on one out of each 100 tieback anchors. Perform tests by applying the proof load and maintaining it constant for 24 hours.
- 3. Keep records of axial movements with incremental applications of the load, and the amount of time of load fall-off with no pumping of the jack or axial movement during the 24-hour period that the proof load on the anchor is maintained.
- 4. Redesign the tieback system to attain specified limits if, during the 24-hour period, the axial deformation of the tieback system exceeds 0.20-inch, or the decrease in jack pressure without pumping is more than five percent after correcting for temperature changes.

### 3.04 ALTERNATE SUPPORT OF EXCAVATION SYSTEMS:

A. Other approved methods of excavation support system installation, such as internally braced secant pile walls, may be determined as acceptable after submittals by the Contractor have been reviewed, for informational purposes only, by the Owner's Engineer.

### 3.5 WASTE MANAGEMENT:

A. Separate and dispose of waste in accordance with the Project's Waste Management Plan.

**END OF SECTION**