CITY OF WORCESTER
455 MAIN STREET, WORCESTER, MA
01608

PROJECT MANUAL

WATERPROOFING AND REPAIRS UNION STATION GARAGE

225 FRANKLIN ST. WORCESTER MA, 01604

DIVISIONS 0 THROUGH 28

October 2026

SET NUMBER

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CITY OF WORCESTER
INVITATION TO BID / NOTICE TO CONTRACTORS

The City of Worcester, the Awarding Authority, invites sealed bids for: **WATERPROOFING AND REPAIRS UNION STATION GARAGE at 225 FRANKLIN ST. WORCESTER MA, 01604** in accordance with documents prepared by Nault Architects, Inc., 71 Hope Ave, Worcester MA 01603.

The project scope generally includes a new sump pit and pump in the elevator shaft, repairs to concrete and masonry, application of new waterproofing systems, partial roof replacement, revisions to the sprinkler fire alarm and electrical systems at the Union Station Garage, located at 225 Franklin St, Worcester MA 01604.

SEALED GENERAL BIDS for **WATERPROOFING AND REPAIRS AT THE UNION STATION GARAGE** will be received at City Hall, 455 Main St, room 201, Worcester, MA 01608, no later than **10:00 a.m., November 4, 2026**, and will be publicly opened thereafter and read aloud.

General Bids must be accompanied by:

1. A fully executed FORM FOR THE GENERAL BID;
   a. **Specification Section 004000**.
2. City of Worcester form of Tax Payment Certificate, CORI, REAP, and Wage Theft.
   a. Specification Section 008500.
3. **A Certificate of Eligibility** certifying the bidder's qualification in the category of **General Building Construction** issued by the Division of Capital Asset Management and Maintenance, DCAMM (formerly the Division of Capital Planning and Operations, DCPO), showing that the Bidder has been approved to bid on projects the size and nature of this project. In order to be eligible to be awarded this contract, a general bidder must be certified in the appropriate category and for the total Project Cost including all alternates elected (if applicable) to be taken by the Owner.
4. **A Contractor Update Statement**, DCPO FORM CQ3. It is the Bidder's responsibility to obtain the necessary forms and make application to DCAMM (DCPO) in sufficient time for DCAMM (DCPO) to evaluate the application and issue a Certificate of Eligibility. A sample of the **Contractor Update Statement**, DCAMM FORM CQ3 (revised December 1999) is located at the end of Section 001500.
5. Bid deposit for the general bid in the amount of **five (5) percent** of the value of the bid or a bid bond.
6. **Foreign Corporation Certificate of Registration** from the Commonwealth of Massachusetts State Secretary (if applicable).
7. **Certificate of Compliance with Buy America Requirements & Buy America Rolling Stock** – See Owner – Contractor Agreement, Exhibit C, Article 4.
8. **DBE Utilization Form** - See Owner – Contractor Agreement, Exhibit C, Article 9.6
9. **DBE Participation Schedule** - See Owner – Contractor Agreement, Exhibit C, Article 9.6
10. **DBE Letter of Intent** – From each DBE listed in the DBE Participation Schedule. See Owner – Contractor Agreement, Exhibit C, Article 9.6
11. **DBE Affidavit** – From each DBE stating that there has not been any change in its status since the date of its last certification. See Owner – Contractor Agreement, Exhibit C, Article 9.6.
12. **Lobbying Restrictions Certification** - See Owner – Contractor Agreement, Exhibit C, Article 14.

SEALED FILED SUB-BIDS for **WATERPROOFING AND REPAIRS AT THE UNION STATION GARAGE** will be received at City Hall, 455 Main St, room 201, Worcester, MA 01608 no later than **10:00 a.m., October 21, 2026**, and will be publicly opened thereafter and read aloud.

Filed Sub-Bids required are as follows:

1. Masonry 040001
2. Waterproofing under Section 070001
3. Fire Protection under Section 210001
4. Plumbing under Section 220001
5. Electrical under section 260000

SUB-Bids must be accompanied by:

1. A fully executed FORM FOR SUB-BID;
   Specification Section 005000.
2. City of Worcester form of Tax Payment Certificate, CORI, REAP, and Wage Theft.
   Specification Section 008500.
3. **A Certificate of Eligibility** certifying the bidder's qualification - in the category of the sub-bid for which this bid is being submitted, based on the designation found in SECTION 00 01 00 Table of Contents of this project manual - issued by the Division of Capital Asset Management and Maintenance, DCAMM (formerly the Division of Capital Planning and Operations, DCPO), showing that the Bidder has been approved to bid on projects the size and nature of this project. In order to be eligible to be awarded this contract, a general bidder must be certified in the appropriate category and for the total Project Cost including all alternates elected (if applicable) to be taken by the Owner.
4. **A Contractor Update Statement**, DCPO FORM CQ3. It is the Bidder's responsibility to obtain the necessary forms and make application to DCAMM (DCPO) in sufficient time for DCAMM (DCPO) to evaluate the application and issue a Certificate of Eligibility. A sample of the **Contractor Update Statement**, DCAMM FORM CQ3 (revised December 1999) is located at the end of Section 001500.
5. Bid deposit for the general bid in the amount of **five (5) percent** of the value of the bid or a bid bond.
6. **Foreign Corporation Certificate of Registration** from the Commonwealth of Massachusetts State Secretary (if applicable).

PLANS AND SPECIFICATIONS will be available on **October 7, 2026**, at City Hall-Purchasing Division, 455 Main St, room 201, Worcester, MA 01608, Phone: (508) 799-1220. Plans and specifications are also available at Open Bids | City of Worcester

WAGE RATES - Bids are subject to the provisions of M.G.L., Chapter 149, Section 44A to J inclusive, as amended to date, and such other Federal, State and Municipal laws or regulations.

Attention of bidders is particularly called to the requirements as to conditions of employment to be observed and to the fact that not less than the minimum wage rates set forth in the Contract Documents shall be paid on this project. Minimum wage rates are per M.G.L., Chapter 149, Sections 26 & 27 inclusive. In addition, to the extent included in this solicitation, federal, Davis-Bacon Act wage rates also apply to the work. In the event of a conflict between the state and federal wage rates, the higher rate shall apply.

NOISE ORDINANCE – All Contractors must adhere to the provision 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.

PRE-BID CONFERENCE - The pre-bid conference will be held on **October 13, 2026**, at the project site, UNION STATION GARAGE beginning at **10:00 a.m.** with a brief overview and tour of the construction areas. It is recommended that all Bidders attend this meeting.

WORK UNDER SEPARATE CONTRACTS AND BY OWNER – The Owner may do other work during construction with its own forces or by separate contract.

COMMENCEMENT OF WORK AND TIME OF COMPLETION – The selected General Bidder must agree to commence work within five (5) days of the execution of a General Contract and to be substantially complete by **JUNE 30, 2027.**

The Awarding Authority reserves the right to waive any informality in, or to reject any or all general bids, if it were in the public interest to do so. In inviting sub-bids in connection with such a contract, the Awarding Authority shall reserve the right to reject any sub-bid on any sub-trade, if it determines that such sub-bid does not represent the sub-bid of a person competent to perform the work as specified, or that less than three (3) such sub-bids were received and that the prices are not reasonable for acceptance without further competition.

The Worcester Redevelopment Authority/City of Worcester is an equal opportunity/affirmative action employer.

END OF DOCUMENT

CITY OF WORCESTER

INSTRUCTIONS TO BIDDERS

ARTICLE 1 - INTRODUCTION; DEFINITIONS

In accordance with an Advertisement for Bids, a copy of which is bound herewith, the City of Worcester Authority (the "Owner") has invited bids for the **WATERPROOFING AND REPAIRS UNION STATION GARAGE at 225 FRANKLIN ST. WORCESTER MA, 01604**

The project scope includes a new sump pit and pump in the elevator shaft, repairs to concrete and masonry, application of new waterproofing systems, partial roof replacement, revisions to the sprinkler fire alarm and electrical systems and any other related work necessary to complete all the Work of the respective Sections and indicated on the drawings.

1.1 These Instructions to bidders (the "Instructions") are intended to assist bidders (which term as used in these Instructions shall include general bidders and sub-bidders if applicable) 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.

1.2 The award of the contract is governed by Chapter 149, Sections 44A-44J 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.

1.3 The following definitions shall apply in these Instructions and in the other Contract Documents:

(1) 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.

ARTICLE 2 - AVAILABILITY OF CONTRACT DOCUMENTS

2.1 Each person requesting Contract Documents including bid forms, plans, specifications and addenda, shall proceed as directed in the Advertisement for Bids. Plans and specifications are available at Open Bids | City of Worcester.

ARTICLE 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 Purchasing Division, 455 Main St, Room 201, Worcester, MA 01608, McDonaldS@worcesterma.gov of any ambiguity, inconsistency, or error he may discover upon examination of the Contract Documents, the site or other local conditions. 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.

3.4 A pre-bid conference will be held at the place and time set forth in the Advertisement for Bids.

ARTICLE 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 City Hall-Purchasing Division, 455 Main St, room 201, Worcester, MA 01608, email: McDonaldS@worcesterma.gov 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 (2) days before the date fixed for opening of bids. Addenda will be sent by email to the contact listed on the receipt for drawings and specifications. 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. Failure to acknowledge receipt of an Addendum on the Bid Form by the Bidder may be cause for rejection of the Bid.

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 Architect, any information, explanation or interpretation of the Contract Documents rendered in any fashion except as herein provided.

ARTICLE 5 - PRE QUALIFICATION BY DIVISION OF CAPITAL ASSET MANAGEMENT (DCAM formerly DCPO) (CHAPTER 149 PROJECTS)

5.1 **GENERAL BIDS** on this contract must be accompanied by a copy of a Certificate of Eligibility issued by the Deputy Commissioner of the Massachusetts Division of Capital Asset Management (formerly the "DCPO") showing that the bidder has the classification and capacity rating to perform the work required. In order to be eligible to be awarded this contract, a general bidder must be certified by the DCAM for the total Project Cost, including all alternates elected (if applicable) to be taken by the Owner, and certified in the category of **General Building Construction**.

5.2 Each general bid must also be accompanied by a Contractor Qualifications Statement Update ("Update Statement"). The Owner will furnish copies of the Update Statement form to bidders on

request. (Note: A sample copy of the Update Statement is located at the end of this Section.). Any general bid submitted without a currently valid Certificate of Eligibility and Update Statement shall be invalid and will not be accepted by the Owner.

5.3 The Owner may at its discretion give the bidder notice of defects or omissions in the bidder's Update Statement and an opportunity to make revisions to this statement. A contractor's bid shall not be rejected if there are mistakes or omissions of form in its Update Statement, provided the contractor promptly corrects those mistakes or omissions upon request by the Owner.

5.4 The Owner will consider the information contained in the Update Statement, which it may verify by its own investigation, and material that it may request from the DCAM according to 810 CMR 4.03 (12) in determining whether the low bidder is eligible for contract award pursuant to M.G.L. Chapter 149, Section 44A (2). The Owners eligibility review of the low bidder will concentrate on the bidder's performance since its last certification by the DCAM, provided, however, that the Owner may bring information to the DCAM's attention concerning a contractor's qualifications, if the DCAM was not aware of that information when it certified the contractor.

5.5 The low bidder may not be awarded a contract which, when added to the cost to complete all other currently held contracts, would exceed the contractor's aggregate rating limit.

(1) The Owner will use the information provided in the Update Statement to compute the amount of work the bidder has underway.

(2) If the contractor provides the Owner with evidence that its outstanding balance of contracts will be within its aggregate rating limit by the start date of the project for which it is low bidder, the Owner may, at its discretion, make the contract award.

5.6 Should the lower bidder be determined not to be eligible, the Owner shall review the next low bidder's eligibility, in accordance with these procedures and the applicable legal requirements until a bidder is determined to be eligible for contract award.

5.7 The contract shall not be awarded to any bidder whose submitted background information when investigated and verified by the Owner, raises significant question as to his ability to successfully complete the project in question due to problems with his competence and responsibility.

ARTICLE 6 - WAGE RATES

6.1 Minimum rates of wages for work performed under this contract will be as predetermined by the Commissioner of Labor and Industries of the Commonwealth of Massachusetts in accordance with the provisions of Sections 26 to 27C, inclusive of Chapter 149 of the Massachusetts General Laws. In addition, to the extent included in this solicitation, federal, Davis-Bacon Act wage rates also apply to the work. In the event of a conflict between the state and federal wage rates, the higher rate shall apply.

6.2 Section 27B of said Chapter 149 provides record-keeping requirements for contractors and subcontractors with respect to employees, hours, wages and other matters.

6.3 Bidders' attention is called to Section 148 of Chapter 149 of the Massachusetts General Laws, relating to the weekly payment of wages.

ARTICLE 7 - SALES TAX

7.1 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 therefore. The number of the certificate granted by the Commissioner of Revenue

for use in obtaining the exemption is **MA Taxpayer ID: 10623328, Certificate Number: 1943634944.**

ARTICLE 8 - PREPARATION AND SUBMISSION OF BIDS

8.1 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 may be submitted without 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, the bidder shall provide all such prices. 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.

8.2 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 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. A Certificate of Eligibility and an Update Statement in accordance with Section 5 shall if applicable, accompany each general bid.

8.3 Each sub-bid shall be submitted as specified in Paragraph 8.2 above, and, in addition, the notation "SUB-BID" and the name of the sub-trade for which the sub-bid is submitted shall be placed on the outside of the sealed envelope containing the sub-bid.

8.4 The Form for General Bid requires the general bidder to indicate whether performance and payment bonds will be required by the general bidder to be furnished by one or more filed sub-bidders. If the general bidder requests one or more filed sub-bidders to furnish such bonds, the general bidder must pay the premiums for all such bonds requested, and must include the costs of such premiums in his general bid.

8.5 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 Massachusetts General Laws Chapter 181, Sections 3 and 5. Therefore, every Foreign Corporation, whether submitting a general or sub-bid, 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 invalid and may be rejected pursuant to Section 11.

ARTICLE 9 - RECEIPT OF BIDS

9.1 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 and will be returned to the Bidder unopened. The time of receipt will determine the acceptability of mailed bids, regardless of postmark.

9.2 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.

9.3 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.

ARTICLE 10 - BID DEPOSIT

10.1 A bid deposit in the form of a bid bond, or a certified check must accompany each bid, or a treasurer's or cashier's 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 and 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 conditioned upon the faithful performance by the principal of the agreements contained in the bid. The bid deposit shall be in the amount of five (5) percent of the value of the bid.

ARTICLE 11 - REJECTION OF BIDS

11.1 The Owner reserves the right to reject any or all general bids if it were in the public interest to do so. The Owner reserves the right to reject any sub-bid on any sub-trade, if it determines that such sub-bid does not represent the sub-bid of a person competent to perform the work as specified or that less than three (3) such sub-bids were received and that the prices are not reasonable for acceptance without further competition.

11.2 Within two (2) days, Saturdays, Sundays and legal holidays excluded, after opening sub-bids, the Owner will reject every sub-bid which is not accompanied by the required bid deposit or which otherwise does not conform to statutory requirements, or which is on a form not completely filled in, or which is incomplete, conditional or obscure, or which contains any addition not called for; provided, however, that the failure of the Owner to reject such a sub-bid within such period shall not validate such a sub-bid nor preclude the Owner from subsequently rejecting it.

11.3 The Owner shall reject every general bid and filed sub-bid which is not accompanied by the required bid deposit, or which otherwise does not conform to the statutory requirements or the bid documents.

11.4 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.

ARTICLE 12 - AWARD OF CONTRACT

12.1 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.

12.2 Award of the contract will be made within thirty (30) days, Saturdays, Sundays and legal holidays excluded, after (i) the opening of the general 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.

12.3 The successful bidder will be notified in writing, by mail or otherwise, that their 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 if requested, 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.

12.4 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, subject to the provisions of Sections 44A-44J, inclusive, of said Chapter 149 of the Massachusetts General Laws.

12.5 After the apparent lowest eligible and responsible general bidder is selected, it shall promptly confer with the Owner on the question of sub-bidders. Upon the Owner's acceptance of the sub-bidders to be utilized, the selected bidder shall promptly present subcontracts to its filed sub-bidders, and in all cases, the presentment of subcontracts must be made a minimum of six days prior to the presentment of the general contract to the general bidder by the Owner. The general bidder shall submit copies of the executed subcontracts to the Owner as a prerequisite to the Owner's presentment of the general contract. As provided in the statutory subcontract form, the validity of the subcontracts is contingent upon execution of the general contract. [Massachusetts General Laws Chapter 149, Section 44F(4)(c)].

ARTICLE 13 - CERTIFICATES AND DOCUMENTS TO BE FURNISHED PRIOR TO EXECUTION OF THE CONTRACT

13.1 If the amount or the estimated amount of this contract is greater than $100,000, then, pursuant, to Section 39R of Chapter 30 of the Massachusetts General Laws, the Contract Documents require the general contractor to make and keep books, records and accounts pertaining to the contractor's financial affairs and to file with the Deputy Commissioner of Capital Asset Management and the Owner the statements and certificates described below in Paragraphs 13.2, 13.3 and 13.4.

13.2 Prior to the execution of the contract the general contractor shall file with the Owner:

(1) A statement of management controls.

(2) A statement prepared and signed by an independent certified public accountant, stating that he and or she have examined the statement of management on internal accounting controls, and expressing an opinion as to:

a. whether the representations of management are consistent with the result of management's evaluation of the system of internal accounting controls; and

b. 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.

13.3 Prior to execution of the contract, and annually during the term of the contract, the general contractor shall file with the Deputy Commissioner of Capital Asset Management a Financial Statement prepared by an independent certified public accountant on the basis of an audit by such accountant. All statements shall be accompanied by an accountant's report.

13.4 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.

13.5 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 General Conditions of the Contract.

13.6 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.

13.7 The general contractor as stated in the bid form must furnish a performance bond and a labor and materials payment bond, each in the amount of the contract sum. Such bonds must be on the forms similar to those 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.

13.8 A performance and a labor and materials payment bond furnished by a subcontractor, at the request of a general contractor, shall secure the performance of the sub-contract by the subcontract; and shall indemnify and hold harmless the general contractor and the surety or sureties under the labor and materials payment bond furnished by the general contractor to the Owner against (1) any and all and expense arising out of any and all claims in connection with the performance of said subcontract which would be required to be paid under the labor and materials payment bond furnished by the general contractor to the Owner and (2) attorney's fees in the event that the subcontractor, after the notice, fails to assume the defense and defend such claims.

13.9 The subcontract agreement between the general contractor and each filed subcontractor shall be in the form contained in the Contract Documents bound with the instructions, as required by Section 44 F of said Chapter 149 of the Massachusetts General Laws.

ARTICLE 14 - FILED SUB-BID PROCEDURE

14.1 As stated in the Advertisement for Bids, the Owner has requested FILED SUB-BIDS on the following classes of work:

(1) Section 040001 - Masonry

(2) Section 070001 - Waterproofing

(3) Section 210001 - Fire Protection

(4) Section 220001 - Plumbing

(5) Section 260000 – Electrical

14.2 Every sub-bidder duly filing a sub-bid with the Owner shall be bound thereby to every general bidder not excluded therein from the use thereof; and any variance from such sub-bid communicated to a general bidder shall be of no effect.

14.3 Each sub-bidder shall list in the sub-bid form the name and bid price of each person, firm or corporation performing each class of work or part thereof for which the section of the specifications for that sub-trade requires such listings; provided that in the absence of a contrary provision in the specification, any sub-bidder may, without listing any bid price, list his own name for any such class of work or part thereof and perform that work with persons on his own payroll if such sub-bidder after sub-bid opening, shows to the satisfaction of the Owner that he does customarily perform such class of work or the part thereof with employees on his own payroll who are mechanics or laborers referred to in Section 26 of said Chapter 149, of the Massachusetts General Laws, and is qualified so to do.

14.4 **FILED SUB-BIDS** on this contract must be accompanied by a copy of a Certificate of Eligibility issued by the Deputy Commissioner of the Massachusetts Division of Capital Asset Management (formerly the "DCPO") showing that the bidder has the classification and capacity rating to perform

the work required. In order to be eligible to be awarded this contract, each filed sub-bidder must be certified by the DCAM for their total Project Cost, including all alternates elected (if applicable) to be taken by the Owner, and certified in their respective trade category.

14.5 Each filed sub-bid must also be accompanied by a Contractor Qualifications Statement Update ("Update Statement"). The Owner will furnish copies of the Update Statement form to bidders on request. (Note: A sample copy of the Update Statement is located at the end of this Section.). Any filed sub-bid submitted without a currently valid Certificate of Eligibility and Update Statement shall be invalid and will not be accepted by the Owner.

14.6 Not later than the second day, Saturdays, Sundays and legal holidays excluded, before the day fixed by the Owner for the opening of general bids, the Owner shall mail to every person on record as having taken a set of Drawings and Specifications a list of sub-bidders arranged by sub-trades and listing for each sub-trade the name, address and sub-bid price of every sub-bidder submitting a sub-bid thereon not rejected by the Owner, and the general bidders excluded from using such sub-bid. A person shall not be named by a general bidder as a sub-bidder for a sub-trade on the general bid form unless such person is included for such sub-trade in said list.

14.7 All sub-bidders, when finally selected, shall be notified in writing of their selection with forty-eight (48) hours thereafter by the general bidder. The selected general bidder and each of the selected sub-bidders shall promptly execute the subcontract agreements, and fully executed copies of all subcontract agreements shall be delivered to the Owner prior to presentment of the Owner-Contractor Agreement to the selected general bidder for execution. The selected General Bidder shall promptly and without delay, notify the Owner of any selected sub-bidder who fails to execute a sub-contract or furnish the requisite bonds and/or insurance within five (5) days of presentment thereof.

SAMPLE DCAMM FORM CQ3

CERTIFICATE OF ELIGIBILITY UPDATE STATEMENT

ON THE FOLLOWING PAGES

DIVISION OF CAPITAL ASSET MANAGEMENT & MAINTENANCE

PRIME UPDATE STATEMENTS ARE NOT PUBLIC RECORDS AND ARE NOT OPEN TO PUBLIC INSPECTION (M.G.L. C.149, §44D)

TO ALL BIDDERS AND AWARDING AUTHORITIES

A COMPLETED AND SIGNED PRIME CONTRACTOR UPDATE STATEMENT MUST BE SUBMITTED WITH EVERY PRIME BID FOR A CONTRACT PURSUANT TO M.G.L. c.149, §44A AND M.G.L. c. 149A. ANY PRIME BID SUBMITTED WITHOUT AN APPROPRIATE UPDATE STATEMENT IS INVALID AND MUST BE REJECTED.

Caution: This form is to be used for submitting Prime Contract bids. It is not to be used for submitting Filed Sub-Bids or Trade Sub-Bids.

AWARDING AUTHORITIES

If the Awarding Authority determines that the bidder does not demonstrably possess the skill, ability and integrity necessary to perform the work on the project, it must reject the bid.

BIDDER'S AFFIDAVIT

I swear under the pains and penalties of perjury that I am duly authorized by the bidder named below to sign and submit this Prime Contractor Update Statement on behalf of the bidder named below, that I have read this Prime Contractor Update Statement, and that all of the information provided by the bidder in this Prime Contractor Update Statement is true, accurate, and complete as of the bid date.

Bid Date	Print Name of Prime Contractor
Project Number (or name if no number)	Business Address
Awarding Authority	Telephone Number

SIGNATURE⇨ _____

Bidder's Authorized Representative

INSTRUCTIONS

INSTRUCTIONS TO BIDDERS

- This form must be completed and submitted by all Prime contractors bidding on projects pursuant to M.G.L. c. 149, §44A and M.G.L. c. 149A.
- You must give complete and accurate answers to all questions and provide all of the information requested. MAKING A MATERIALLY FALSE STATEMENT IN THIS UPDATE STATEMENT IS GROUNDS FOR REJECTING YOUR BID AND FOR DEBARRING YOU FROM ALL PUBLIC CONTRACTING.
- **This Update Statement must include all requested information that was not previously reported on the Application used for your firm's most recently issued (not extended or amended) Prime Contractor Certificate of Eligibility. The Update Statement must cover the entire period since the date of your Application, NOT since the date of your Certification.**
- You must use this official form of Update Statement. Copies of this form may be obtained from the awarding authority and from the Division of Capital Asset Management and Maintenance Web Site: www.mass.gov/DCAMM.
- If additional space is needed, please copy the appropriate page of this Update Statement and attach it as an additional sheet.
- See the section entitled "Bidding Limits" in the *Instructions to Awarding Authorities* for important information concerning your bidding limits.

INSTRUCTIONS TO AWARDING AUTHORITIES

Determination of Bidder Qualifications

- It is the awarding authority's responsibility to determine who is the lowest eligible and responsible bidder. You must consider all of the information in the low bidder's Update Statement in making this determination. Remember: this information was not available to the Division of Capital Asset Management and Maintenance at the time of certification.
- The bidder's performance on the projects listed in Parts 1 and 2 must be part of your review. Contact the project references.
- AWARDING AUTHORITIES ARE STRONGLY ENCOURAGED TO REVIEW THE LOW BIDDER'S ENTIRE CERTIFICATION FILE AT THE DIVISION OF CAPITAL ASSET MANAGEMENT AND MAINTENANCE. Telephone (617) 727-9320 for an appointment.

Bidding Limits

Single Project Limit: The total amount of the bid, including all alternates, may not exceed the bidder's Single Project Limit.

Aggregate Work Limit: The annual value of the work to be performed on the contract for which the bid is submitted, when added to the annual cost to complete the bidder's other currently held contracts, may not exceed the bidder's Aggregate Work Limit. Use the following procedure to determine whether the low bidder is within its Aggregate Work Limit:

Step 1 Review Update Statement Question #2 to make sure that all requested information is provided and that the bidder has accurately calculated and totaled the annualized value of all incomplete work on its currently held contracts (column 9).

Step 2 Determine the annual dollar value of the work to be performed on your project. This is done as follows:

(i) If the project is to be completed in less than 12 months, the annual dollar value of the work is equal to the full amount of the bid.

(ii) If the project will take more than 12 months to complete, calculate the number of years given to complete the project by dividing the total number of months in the project schedule by 12 (calculate to 3 decimal places), then divide the amount of the bid by the calculated number of years to find the annual dollar value of the work.

Step 3 Add the annualized value of all of the bidder's incomplete contract work (the total of column 9 on page 5) to the annual dollar value of the work to be

performed on your project. **The total may not exceed the bidder's Aggregate Work Limit**.

Correction of Errors and Omissions in Update Statements

Matters of Form: An awarding authority shall not reject a contractor's bid because there are mistakes or omissions of form in the Update Statement submitted with the bid, provided the contractor promptly corrects those mistakes or omissions upon request of the awarding authority. [810 CMR 8.05(1)].

Correction of Other Defects: An awarding authority may, in its discretion, give a contractor notice of defects, other than mistakes or omissions of form, in the contractor's Update Statement, and an opportunity to correct such defects, provided the correction of such defects is not prejudicial to fair competition. An awarding authority may reject a corrected Update Statement if it contains unfavorable information about the contractor that was omitted from the Update Statement filed with the contractor's bid. [810 CMR 8.05(2)].

PART 1 - COMPLETED PROJECTS

LIST ALL PUBLIC AND PRIVATE *BUILDING* PROJECTS YOUR FIRM HAS COMPLETED SINCE THE DATE OF APPLICATION FOR YOUR MOST RECENTLY ISSUED (NOT EXTENDED OR AMENDED) DCAMM CERTIFICATE OF ELIGIBILITY. YOU MUST REPORT ALL REQUESTED INFORMATION NOT PREVIOUSLY REPORTED ON THAT DCAMM APPLICATION*.

PROJECT TITLE & LOCATION	WORK CATEGORY	CONTRACT PRICE	START DATE	DATE COMPLETED

Attach additional sheets if necessary

* If your firm has been terminated from a project prior to completion of the work or has failed or refused to complete its work under any contract, full details and an explanation must be provided. See Part 3 of this Update Statement.

PROVIDE THE FOLLOWING REFERENCE INFORMATION FOR EACH COMPLETED PROJECT LISTED ON THE PREVIOUS PAGE.

PROJECT TITLE	COMPANY NAME	CONTACT PERSON	TELEPHONE
	OWNER:		
	DESIGNER:		
	GC:		
	OWNER:		
	DESIGNER:		
	GC:		
	OWNER:		
	DESIGNER:		
	GC:		
	OWNER:		
	DESIGNER:		
	GC:		
	OWNER:		
	DESIGNER:		
	GC:		

Is your company or any individual who owns, manages or controls your company affiliated with any owner, designer or general contractor named above, either through a business or family relationship? ☐ YES ☐ NO

Are any of the contact persons named above affiliated with your company or any individual who owns, manages or control your company, either through a business or family relationship? ☐ YES ☐ NO

If you have answered YES to either question, explain. _____

PART 2 - CURRENTLY HELD CONTRACTS

LIST ALL PUBLIC AND PRIVATE BUILDING AND NON-BUILDING *CONSTRUCTION* PROJECTS YOUR COMPANY HAS UNDER CONTRACT ON THIS DATE REGARDLESS OF WHEN OR WHETHER THE WORK COMMENCED.

1	2	3	4	5	6	7	8	9
PROJECT TITLE & LOCATION	WORK CATEGORY	START AND END DATES	ON SCHEDULE (yes / no)	CONTRACT PRICE	% NOT COMPLETE	$ VALUE OF WORK NOT COMPLETE (col. 5 X col. 6)	NO. OF YEARS REMAINING (see note below)	ANNUALIZED VALUE OF INCOMPLETE WORK (col. 7 ÷ col. 8) (divided by)

ANNUALIZED VALUE OF ALL INCOMPLETE CONTRACT WORK (Total of Column 9) $_____

Column 8
- If less than one year is left in the project schedule, write 1.
- If more than 12 months are left in the project schedule, divide the number of months left in the project schedule by 12 (calculate to three decimal places).

PROVIDE THE FOLLOWING REFERENCE INFORMATION FOR EACH CURRENTLY HELD PROJECT LISTED ON THE PREVIOUS PAGE.

PROJECT TITLE	COMPANY NAME	CONTACT PERSON	TELEPHONE
	OWNER:		
	DESIGNER:		
	GC:		
	OWNER:		
	DESIGNER:		
	GC:		
	OWNER:		
	DESIGNER:		
	GC:		
	OWNER:		
	DESIGNER:		
	GC:		
	OWNER:		
	DESIGNER:		
	GC:		

Is your company or any individual who owns, manages or controls your company affiliated with any owner, designer or general contractor named above either through a business or family relationship? ☐ YES ☐ NO

Are any of the contact persons named above affiliated with your company or any individual who owns, manages or control your company, either through a business or family relationship? ☐ YES ☐ NO

If you have answered YES to either question, explain. _____

For **Parts 3 and 4**, if you answer YES to any question, please provide on a separate page a complete explanation. You must report all requested information not previously reported on your most recent DCAMM Application for Prime Certificate of Eligibility. Information must supplement all judicial and administrative proceedings involving bidder's firm, which were instituted or concluded (adversely or otherwise) since your firm's Application for your most recently issued (not extended or amended) Certificate of Eligibility. Include all details [project name(s) and location(s), names of all parties involved, relevant dates, etc.].

PART 3 – GENERAL PERFORMANCE

Part 3 of the Update Statement corresponds to Section 5 of the Prime Application. The numbering below refers back to the numbered questions in the application for your reference.

Prime Application Section 5 - General Performance

	YES	NO
5.A. Has your Company been terminated prior to completion of a Contract?	☐	☐
5.B. Has your Company failed or refused to perform or complete any of its Scope of Work under any Contract prior to substantial completion?	☐	☐
5.C. Has your Company and/or any principal, officer, or individual with a Financial Interest in your Company filed for bankruptcy?	☐	☐
5.D. Has a surety for your Company taken over or been asked to complete your Scope of Work under any Contract?	☐	☐
5.E. Has a payment or performance bond been invoked against your Company on any Contract?	☐	☐
5.F. Has any surety for your Company made payment under a payment bond to a vendor or supplier or other party on any Contract?	☐	☐
5.G. Has any subcontractor filed a demand for direct payment on any of your Contracts?	☐	☐
5.H. Has a lawsuit been filed by any of your subcontractors or suppliers to enforce a mechanic's lien in connection with any of your Contracts?	☐	☐
5.I. Has there been a death of any Company employee or other person in connection with (or as the result of) performing your Company's Scope of Work on any of your Contracts?	☐	☐
5.J. Has any Company employee or other person suffered an injury while performing any tasks within the Scope of Work on any of your Contracts resulting in his/her inability to return to work for a period in excess of one year?	☐	☐

PART 4 – LEGAL OR ADMINISTRATIVE PROCEEDINGS; COMPLIANCE WITH LAWS

Part 4 of the Update Statement corresponds to section 6 of the Prime Application. The numbering below refers back to the numbered questions in the application for your reference.

Prime Application Section 6 -Legal or Administrative Proceedings; Compliance with Laws

The term "administrative proceeding" as used in this Prime Contractor Update Statement includes (i) any action taken or proceeding brought by a governmental agency, department or officer to enforce any law, regulation, code, legal, or contractual requirement, except for those brought in state or federal courts, or (ii) any action taken by a governmental agency, department or officer imposing penalties, fines or other sanctions for failure to comply with any such legal or contractual requirement.

The term "anyone with a financial interest in your firm" as used in this Section "I", shall mean any person and/or entity with a 5% or greater ownership interest in the applicant's firm.

	YES	NO
6.A. Have any Judicial Actions or Administrative Proceedings involving your Company and/or a principal or officer or individual with a Financial Interest in your Company been brought, concluded, or settled relating to the procurement or performance of any of your Contracts?	☐	☐
6.B. Have any Judicial Actions or Administrative Proceedings involving your Company and/or a principal or officer or individual with a Financial Interest in your Company been brought, concluded, or settled relating to a violation of any state or federal construction procurement laws?	☐	☐
6.C. Have any criminal charges involving your Company and/or a principal or officer or individual with a Financial Interest in your Company been brought, concluded, or settled relating to the procurement or performance of any of your Contracts (e.g., fraud, graft, embezzlement, forgery, bribery, falsification or destruction of records or receipt of stolen property)?	☐	☐
6.D. Have any Judicial Actions or Administrative Proceedings involving your Company and/or a principal or officer or individual with a Financial Interest in your Company been brought, concluded, or settled relating to a violation of state ethics laws (in Massachusetts: M.G.L. Chapter 268A)?	☐	☐

Section 6 - Legal or Administrative Proceedings; Compliance with Laws (continued)

	YES	NO
6.E. Have any Judicial Actions or Administrative Proceedings involving your Company and/or a principal or officer or individual with a Financial Interest in your Company been brought, concluded, or settled relating to a violation of any state or federal law regulating hours of labor, unemployment compensation, minimum wages, prevailing wages, overtime pay, equal pay, child labor or worker's compensation?	☐	☐
6.F. Have any Judicial Actions or Administrative Proceedings involving your Company and/or a principal or officer or individual with a Financial Interest in your Company been brought, concluded, or settled relating to a violation of any state or federal law prohibiting discrimination in hiring and/or employment?	☐	☐
6.G. Have any Judicial Actions or Administrative Proceedings involving your Company and/or a principal or officer or individual with a Financial Interest in your Company been brought, concluded, or settled for violation of any state or federal law regulating labor relations, including collective bargaining agreements, employee welfare benefit plans, employee pension benefit plans, other ERISA and non-ERISA plans?	☐	☐
6.H. Have any proceedings by a local, state, or federal agency been brought, concluded, or settled relating to decertification, debarment or suspension of your Company and/or any principal or officer or individual with a Financial Interest in your Company from construction contracting?	☐	☐
6.I. Have any Judicial Actions or Administrative Proceedings involving your Company and/or a principal or officer or individual with a Financial Interest in your Company been brought, concluded, or settled relating to a violation of state or federal environmental laws?	☐	☐
6.J. Has your Company been fined or sanctioned by OSHA and/or any other state or federal agency for violations of any laws or regulations related to occupational health or safety?	☐	☐
6.K. Has your Company ever (i) failed to meet applicable workforce and/or diversity program goals, benchmarks or other requirements, and/or (ii) been sanctioned, fined and/or penalized for non-compliance with workforce policies and/or diversity programs (e.g., for MBEs, WBEs, SDVOBEs and DBEs) and/or failure to maintain and/or submit required reports, such as certified payrolls.	☐	☐
6.L. Other than previously reported in the above questions, have any Judicial Actions or Administrative Proceedings or investigations involving your Company and/or a principal or officer or individual with a Financial Interest in your Company been brought, concluded, or settled by any local, state or federal agency relating to the procurement or performance of any construction contract?	☐	☐

PART 5 - SUPERVISORY PERSONNEL

List all supervisory personnel, such as project managers and superintendents, who will be assigned to the project if your firm is awarded the contract. **Attach the resume of each person listed below**.

NAME	TITLE OR FUNCTION

PART 6 - CHANGES IN BUSINESS ORGANIZATION OR FINANCIAL CONDITION

Have there been any changes in your company's business organization (**including changes in ownership, mergers, or asset/stock sales**), financial condition or bonding capacity since the date your current Certificate of Eligibility was issued? ☐ Yes ☐ No

If YES, attach a separate page providing complete details.

PART 7 – LIST OF COMPLETED CONSTRUCTION PROJECTS SUBMITTED TO THE DIVISION OF CAPITAL ASSET MANAGEMENT AND MAINTENANCE.

Attach here a copy of the list of completed construction projects which was submitted with your firm's DCAMM Application for your most recently issued (not extended or amended) DCAMM Certificate of Eligibility. The Attachment must include a complete copy of the entire Projects Table – "Completed Projects" and the final page – "Certification" (Signature Page) containing the signature and date that the Completed Projects list was submitted to the Division of Capital Asset Management and Maintenance.

CITY OF WORCESTER
GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

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GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

ARTICLE 1 - GENERAL PROVISIONS

1.1 DEFINITIONS

1.1.1 THE CONTRACT DOCUMENTS

1.1.1.1 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, Instructions 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 Architect pursuant to Article 2, or (4) a written order for a minor change in the Work issued by the Architect pursuant to Article 12. 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.

1.2 THE CONTRACT

1.2.1 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 Article 1. These General Conditions, wherever applicable, shall be construed consistent with, and not to the exclusion of any terms of the Owner-Contractor Agreement, provided further however, that the terms of such Agreement shall take precedence, as provided in Article 1. Except for the special agreements in Article 4, 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.

1.3 THE WORK

1.3.1 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.

1.4 THE PROJECT

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

1.5 EXECUTION, CORRELATION AND INTENT

1.5.1 The Owner and Contractor shall sign the Contract Documents in duplicate.

1.5.2 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.

1.5.3 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 anyone 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.

1.5.4 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.

1.5.5 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.

1.5.6 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.

1.5.7 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.

1.5.8 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.

1.5.9 The Mechanical and Electrical Drawings are diagrammatic only and are not intended to show the exact physical locations or configurations of work. Such work shall be installed to clear all obstructions, permit proper clearances for the work of other trades, and present an orderly appearance where exposed. Exact locations of fixtures and outlets shall be obtained from the Architect as provided in Article 4 before the work is roughed in; work installed without such information from the Architect shall be relocated at the Contractor's expense.

1.5.10 Except for work governed by M.G.L. c.149 §44F, the Owner and Architect assume no liability arising out of jurisdictional issues raised or claims advanced by trade organizations or other interested parties based on the arrangement or manner of subdivision of the content of the Plans and Specifications. The Contractor shall make all necessary arrangements to reconcile any such jurisdictional conflicts without delay, damage, or cost to the Owner, unless otherwise agreed to by the parties hereto.

1.6 OWNERSHIP AND USE OF DOCUMENTS

1.6.1 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.

ARTICLE 2 - ARCHITECT

2.1 DEFINITION

2.1.1 The Architect is the person lawfully licensed to practice Architecture, or an entity lawfully practicing architecture 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 Architect means the Architect or his Authorized Representative.

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 Design Services Agreement 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 Article 2.

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 issue Certificates for Payment in such amounts as provided in Article 9.

2.2.7 The Architect will be the interpreter of the requirements of the Contract Documents and the judge of the performance there under 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. Chapter 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, which 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 Article 7, whether or not such Work be then fabricated, installed or completed. However, neither the Architect's authority to act under this Article 2 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 Article 12.

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 Article 9.

2.2.16 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 that of former Architect.

ARTICLE 3 - OWNER

3.1 DEFINITION

3.1.1 The term Owner means the City of Worcester, acting by and through its chief executive officer manager and such representatives as the chief executive officer shall assign to the Project.

3.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

3.2.1 The Owner shall, at the request of the Contractor, at the time of execution of the Owner-Contractor Agreement, furnish to the Contractor reasonable evidence that he has made financial arrangements to

fulfill his obligations under the Contract. Unless such reasonable evidence is furnished, the Contractor is not required to execute the Owner-Contractor Agreement or to commence the Work.

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 Article 4, 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 The Owner shall furnish information or services under the Owner's control 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, all copies of available bid documents, Drawings, and Specifications. The Contractor may at any time order additional sets at the Contractor's expense.

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 Article 13 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 Article 6.

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 ten (10) 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.

ARTICLE 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 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 there from.

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 Article 4. If the Contractor proceeds with such Work without obtaining further drawings or instructions, he shall correct Work incorrectly done at his own expense.

4.2.4 The Contractor may submit Requests For Information (RFI) to the Architect to help facilitate the Contractor's performance of the Contract. Prior to submitting each RFI, the Contractor shall first carefully study and compare the Contract Documents, field conditions, other Owner provided information, Contractor and Subcontractor prepared Coordination Drawings and prior Project correspondence and documentation to determine that the information to be requested is not reasonably obtainable from such sources after such careful study and comparison.

4.2.5 Each RFI shall be submitted by the Contractor to the Architect for determination. Each RFI shall be in writing, on such form and with such accompanying information as the Architect may require for such purpose. Each RFI shall identify a single item or topic and the specific sources which were reviewed by the Contractor in its efforts to determine the information requested, and a statement that the information being requested could not be determined from such sources.

4.2.6 The Contractor shall submit each RFI sufficiently in advance of the date by which such information is required in order to allow the Architect sufficient time, in the Architect's professional judgment, to permit adequate review and response and to permit Contractor compliance with the latest Construction Schedule.

4.2.7 The Contractor shall reimburse the Owner amounts charged to the Owner by the Architect for responding to excessive or unnecessary RFI's where such information is available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner provided information, Contractor prepared Coordination Drawings, or project correspondence or documentation.

4.3 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 Article 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.

4.4.3 The Contractor shall procure its materials from such sources and employ labor subject to contract terms and conditions so as to ensure harmonious labor relations on the site and prevent strikes or labor disputes. The Contractor, in the event of a labor dispute including strikes, shall take the necessary and appropriate action required at no expense to the Owner to prevent the disruption of the Work.

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 building of consistent character and quality of design. All components of the building, including visible items of mechanical and electrical equipment have been selected to have a coordinated design in relation to the overall appearance of the building. 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 which 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 Article 4 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.

4.5.9 The Contractor shall guarantee all Work for a period of a minimum of one year (unless otherwise required in the specifications to have a longer warranty time) after Date of Substantial Completion or by the terms of any special warranty required by the Contract Documents. The Contractor shall, upon written notice from the Architect, promptly correct defective Work or Work not in accordance with the Contract Documents.

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:

1. Federal Excise Taxes as applied to articles, which are taxable under Chapter 12 of the Internal Revenue Code of l954, as amended.
2. Commonwealth of Massachusetts Sales Tax.
3. City of Worcester MA Taxpayer ID: 10623328; Certificate number: 1943634944

4.7 PERMITS, FEES AND NOTICES

4.7.1 The Contractor and all subcontractors shall secure, coordinate 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.

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 Note that the use of such Allowances are prohibited in any contract or work subject to the provisions of M.G.L. c. 149, §44A.

4.9 PROJECT MANAGEMENT

4.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site full time daily including work performed outside normal working hours 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. Only under extenuating circumstances, and with approval of the Architect and Owner, will the Contractor be allowed to substitute superintendents prior to the date of Substantial Completion. 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, acceptable to the Architect and Owner who shall establish 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, roads, 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.

4.9.3 The Contractor shall attend job meetings with the Architect and such other persons as the Architect may from time to time wish to have present. The Contractor shall be represented by a principal, project manager, general superintendent or other authorized main office representative, as well as by the Contractor's own superintendent. An authorized representative of any Subcontractor or Sub-subcontractor shall attend such meetings, if the representative's presence is requested by the Architect. Such representatives shall be empowered to make binding commitments on all matters to be discussed at such meetings including costs, payments, change orders, time schedules and manpower. Any

notices required under the Contract may be serviced on such representatives. Refer to specification section 01200 Project Meetings for additional requirements.

4.9.4 The Contractor shall establish the building grades, lines, levels, column, wall, and partition lines required by the various subcontractors in laying out their work.

4.9.5 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 Architect a progress schedule as described in Article 8.

4.11 DOCUMENTS AND SAMPLES AT THE SITE

4.11.1 The Contractor shall maintain at the site for the Owner a 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 017700 entitled PROJECT CLOSEOUT, for additional requirements for Record Drawings and Operating and Maintenance 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, which 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 Article 2 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 Article 2. All such portions of the Work shall be in accordance with approved submittals.

4.12.9 Refer to Specifications Section 013300, 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 their 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 of 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 from 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.

4.15.2 If the Contractor fails to maintain a clean site, free of accumulation of waste, rubbish and materials, the Owner may do so after twenty-four-hour notification in accordance with Article 3 and the cost there of shall be charged to the Contractor.

4.15.3 If the Contractor fails to clean up at the completion of the Work, the Owner may do so as provided in Article 3 and the cost thereof shall be charged to the Contractor. Refer to Specifications Section 017000, PROJECT CLOSEOUT, for additional requirements.

4.16 COMMUNICATIONS

4.16.1 The Contractor shall forward all communications to the Owner through the Architect. Except as otherwise provided in the Contract Documents or when direct communications have been specially

authorized, the Owner and Contractor shall communicate through the Architect. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with other Owner's contractors shall be 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 their 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 there from 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 Article 4.

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 Article 4 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 Article 4 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.

ARTICLE 5 - SUBCONTRACTOR

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. Chapter 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 that 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 Article 5. 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 Article 5.

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 toward 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 Sub-subcontractors. 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 Article 5 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 Sub-subcontractors.

ARTICLE 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 Article 6.

6.1.4 The General 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, therefore.

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 Article 10.

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 Article 4, the Owner may clean up and charge the cost thereof to the contractors responsible therefore as the Architect shall determine to be just.

ARTICLE 7 - MISCELLANEOUS PROVISIONS

7.1 GOVERNING LAW

7.1.1 The law of the Commonwealth of Massachusetts shall govern the Contract.

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

Article 9, 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 to the address of such person or entity set forth in the Agreement or in a subsequent written notice or by other means as specified in the Contract Documents.

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 there under 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 there under 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 Article 7 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 Article 7. 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.

ARTICLE 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 Article 8, including authorized adjustments thereto.

8.1.2 The Date of Commencement of the Work is the date of the execution of the Owner-Contractor Agreement. The Contractor shall not commence Work on the site until the Architect issues a Notice to Proceed.

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. The Date of Substantial Completion shall be on or after the date of issuance of a Certificate of Occupancy as defined in 780 CMR for the Work without reservations or conditions by the Building Official.

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 building.

8.2 PROGRESS AND COMPLETION

8.2.1 All time limits stated in the Contract Documents are of the essence to the Contract.

8.2.2 The Contractor shall begin the Work on the date of commencement as defined in Article 8. He shall carry the Work forward expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

8.2.3 Within two (2) 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 resubmittal. 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 (3) 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 action permitted under Article 13 of the document entitled CONTRACT, included elsewhere in the Contract Documents.

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. Chapter 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 Article 2 shall be furnished, then no claim for delay shall be allowed on account of failure to furnish such interpretations until thirty (30) days after written request is made for them, and not unless such claim is reasonable.

8.3.4 This Article 8 does not exclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 - PAYMENTS AND COMPLETION

9.1 CONTRACT SUM

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 object to by the Architect, shall be used only as a basis for the Contractor's Application for Payment.

9.3 APPLICATIONS FOR PAYMENT

9.3.1 In accordance with Section 012900 of the Specifications, the Contractor shall submit to the Architect an itemized Application for Payment, notarized and 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, Article I. The format and number of copies of such Applications for Payment shall be as noted in Section 012900.

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 to 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. See Section 01027.

9.4 CERTIFICATES FOR PAYMENT

9.4.1 The Architect will, within seven (7) days after the receipt of the Contractor's Application for Payment, either issue 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 a Certificate as provided in Article 9.

9.4.2 The issuance 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 Article 2 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 issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents. The Owner retains the right to modify the amount of payment certified by the Architect. Reasons for modification shall be described in writing to the Architect and Contractor.

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 and may withhold his Certificate in whole or in part, to the extent reasonably necessary to protect the Owner, if in his opinion he is unable to make representations to the Owner as provided in Article 9. If the Architect is unable to make representations to the Owner as provided in Article 9 and to certify payment in the amount of the Application, he will notify the contractor as provided in Article 9. 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 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 issued, to such extent as may be necessary in his opinion to protect the Owner from loss because of:

1. 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, or
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. The Architect shall require written confirmation that the record drawings are "up-to-date" before approval of the Contractor's monthly payment requisition will be considered.

9.6.2 When the above grounds in Article 9 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 issue a Certificate for Payment, through no fault of the Contractor, within seven (7) 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 (7) 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 Article 8, 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 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 Article 9 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 satisfying 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 Article 7, 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.

ARTICLE 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 neighboring 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 Article 11) to any property referred to in Article 10 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 Article 10 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 Article 4.

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 designated 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.

10.2.8 The Contractor shall comply with the applicable requirements of NFPA 241: **The Standard for Safeguarding Construction, Alteration, and Demolition** in connection with the Work. Contractor shall, prior to commencing Work on any new building and/or any significant alteration of existing building, submit for review and approval to the Worcester Fire Department a report prepared by a registered fire protection engineer evidencing that the Work shall such comply.

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.

ARTICLE 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. Workmen's Compensation –Massachusetts Statutory / Employers Liability
2. Commercial Liability- Per Occurrence / Aggregate $1,000,000 / $2,000,000
3. Automobile Liability/Combined Single Limit - $2,000,000 (all owned, hired and non-owned autos).
4. Excess / Umbrella Liability –$2,000,000
5. Independent Contractors -Same limits as above
6. Products and Completed Operations -Same limits as above commencing with issuance of final Certificate of Payment.
7. Contractual Liability - Same limits as above.

11.1.2 The insurance required by Article 11 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
2. Commercial Liability - Per Occurrence / Aggregate $1,000,000.00 / 2,000,000.00
3. Automobile Liability/Combined Single Limit – $2,000,000.00 (all owned, hired and non-owned autos).
4. Excess / Umbrella Liability - $2,000,000.00
5. Independent Contractors -Same limits as above
6. Products and Completed Operations -Same limits as above commencing with issuance of final Certificate of Payment

7. Contractual Liability - Same limits as above

11.1.3 The insurance required by Article 11 shall include contractual liability insurance applicable to the Contractor's obligations under Article 4.

11.1.4 Certificates of Insurance acceptable to the Owner shall be filed with the Owner. These Certificates shall contain a provision that coverage afforded under the policies will not be canceled until at least thirty (30) days prior written notice has been given to the Owner.

11.1.5 These certificates shall set forth evidence of all coverage required by Article 11. 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 as provided above in Article 11. This insurance shall include the interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work 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 Article 11 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.

11.3.4 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. All property insurance shall remain in effect until the date of final completion or the date Premises/Property in put in service by the Owner, whichever is earlier.

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 Article 11 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 Article 4. 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 Article 11.

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 received, and he shall distribute it 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 were 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 Article 11.

ARTICLE 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 a change in the Work or an adjustment in the Contract Sum or the Contract Time. Only Change Orders may change the Contract Sum and the Contract Time. A Change Order signed by the Contractor indicates his agreement therewith, including the adjustment in the Contract Sum 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 to 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, or drawings, or otherwise, involve extra cost or time, and such instructions or orders are not accompanied by a written acknowledgment by the Owner and Architect that extra payment will be made or time extended, he shall promptly so notify the Architect in writing and shall not proceed with the work until he has received a further written order to proceed, except, as provided in Article 10, 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 Article 12, 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 in which he 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 Article 12, approves the contractor's claim, Change Order shall adjust the Contract Sum and/or Contract Time. 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 39(J). 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 or impact to the schedule.

12.2.4 No extension of time shall be granted because of seasonal or abnormal variations in temperature, humidity or precipitation, which conditions shall be wholly at the risk of the Contractor, whether occurring within the time originally scheduled for completion or within the period of any extension granted. There shall be no increase in the Contract Sum on account of any additional costs of operations or conditions resulting therefrom.

12.2.5 Time Limits on Claims: Claims by the Contractor must be made within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. Claims must be made by written notice. An additional Claim made after the initial Claim has been implemented by Change Order will not be considered unless submitted in a timely manner.

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 without delay or impact to the schedule.

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 Workmen'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 his 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.

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.

ARTICLE 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 is found in accordance with the Contract Documents, appropriate Change Order shall charge the cost of uncovering and replacement charged to the Owner. If such Work is 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 (1) year after the Date of Substantial Completion of the Work or designated portion thereof or within one (1) 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 Articles 4 and 13, unless the Owner waives removal.

13.2.4 If the Contractor fails to correct defective or non-conforming Work as provided in Articles 4 and 13, the Owner may correct it in accordance with Article 3.

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 (10) days thereafter, the Owner may upon ten (10) 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 Article 13 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 Article 4 hereof. The establishment of the time period of one (1) 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.

END OF SECTION

SUPPLEMENTARY GENERAL CONDITIONS – PART I
STATUTORY PROVISIONS FOR MASSACHUSETTS
PUBLIC CONSTRUCTION CONTRACTS

Paragraph	Subject	Statute or Executive Order
ARTICLE 1 – PAYMENT, CONTRACT ADMINISTRATION, ETC.		
1.1	"or Equal" Clause	M.G.L. Chapter 30, Section 39M(b)
1.2	Delays	M.G.L. Chapter 30, Section 39O
1.3	Deviations	M.G.L. Chapter 30, Section 39I
1.4	Finality of Decisions	M.G.L. Chapter 30, Section 39J
1.5	Differing Site Conditions	M.G.L. Chapter 30, Section 39N
1.6	Timely Decisions	M.G.L. Chapter 30, Section 39P
1.7	Certificate of Appropriation	M.G.L. Chapter 44, Section 31C
1.8	Method of Payment (Public Building Projects)	M.G.L. Chapter 30, Section 39K
1.9	Method of Payment (Public Works Projects)	M.G.L. Chapter 30, Section 39G
1.10	Direct Payment	M.G.L. Chapter 30, Section 39F
1.11	Discharge or Release of Bonds	M.G.L. Chapter 30, Section 40
ARTICLE 2 – WAGES AND EMPLOYMENT PRACTICES		
2.1	Preference to Veterans and Citizens	M.G.L. Chapter 149, Section 26
2.2	Determination of Wage Rates	M.G.L. Chapter 149, Section 27

2.3	Employment Records	M.G.L. Chapter 149, Section 27B
2.4	Wages Paid to Operators of Trucks and Other Equipment	M.G.L. Chapter 149, Section 37F
2.5	Reserve Police Officers	M.G.L. Chapter 149, Section 34B
2.6	Eight-hour Day, etc.	M.G.L. Chapter 149, Sections 30 and 34
2.7	Lodging, etc.	M.G.L. Chapter 149, Section 25
2.8	Access to Contractor's Records	Executive Order No. 195
2.9	Worker's Compensation Insurance	M.G.L. Chapter 149, Section 34A

ARTICLE 3 – CONTRACTOR'S ACCOUNTING METHODS

3.1-3.5	Contractor's Accounting Method Requirements	M.G.L. Chapter 30, Section 39R

ARTICLE 4 – MISCELLANEOUS

4.1	Weather Protection	M.G.L. Chapter 149, Section 44F(1)
4.2	Form for Sub-Contract	M.G.L. Chapter 149, Section 44(F)(4)(c)
4.3	Foreign Corporations	M.G.L. Chapter 30, Section 39L
4.4	Shoring	M.G.L. Chapter 149, Section 129A
4.5	Compliance with Tax Laws	M.G.L. Chapter 62C, Section 49A
4.6	Verification of Construction Debris Disposal	2008 Worcester Revised Ordinances, Chapter 8, Section 7
4.7	Responsible Employer Ordinance	2008 Worcester Revised Ordinances, Chapter 2, Section 35

4.8	Regulation of Construction Noise	2008 Worcester Revised Ordinances, Chapter 8, Section 34
4.9	Regulation of Excessive and Unreasonable Noise	2008 Worcester Revised Ordinances, Chapter Nine, Section 1A(e)(9)

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:

1.1.1 It is at least equal in quality, durability, appearance, strength, and design.

1.1.2 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.

1.1.3 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 39O). 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.

1.2.1 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.

1.2.2 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:

1.3.1 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.

1.3.2 That the specified deviation does not materially injure the project as a whole.

1.3.3 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

1.3.4 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 wilfully 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 payment any amount as provided in part (iii) if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown required by Subparagraph 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 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.

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, 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.

STATEMENT OF COMPLIANCE

I, _____

(Name of signatory party) (Title)

do hereby state:

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

_____

(Contractor, Subcontractor or public body)

on the _____ and that all mechanics

(building or project)

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

Signature: _____

Title: _____

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:

3.3.2.1 to permit preparation of financial statements in conformity with generally accepted accounting principles.

3.3.2.2 to maintain accountability for assets.

3.3.3 Access to assets is permitted only in accordance with management's general or specific authorization.

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.

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.

4.6.1 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.

4.6.2 The verification required under sub-section (a), above, shall consist of the following:

4.6.2.1 a dated receipt, signed by the owner/operator of the licensed solid waste disposal facility where the debris was deposited.

4.6.2.2 the receipt shall contain a description of the debris disposed of, and its weight, or volume.

4.6.2.3 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.

4.6.2.4 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.

4.6.3 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) This paragraph 4.7 shall **NOT** apply to 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 when being funded, or reimbursed, in whole or in part by the Federal Transportation Authority.

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.

4.8.1 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.

4.8.2 Emergency work permits may be issued in:

4.8.2.1 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,

4.8.2.2 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.

4.8.3 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.

4.8.4 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.

4.8.5 Emergency repair work performed by the Department of Public Works and/or any public utility is exempt from this section.

4.8.6 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.

4.8.7 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."

4.8.8 The commissioner of inspectional services shall have the authority to adopt any rules and regulations he or she deems necessary to implement this section.

4.8.9 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.

4.8.10 This section may be enforced by the commissioner of inspectional services, the building commissioner, the chief of police or their subordinates.

4.8.11 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.

4.9.1 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 sub-contractor 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.

END OF SECTION

CITY OF WORCESTER

FORM FOR GENERAL BID

BIDDER'S NAME _____

This bid must be accompanied by a deposit in the form of a 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 (5) percent of the value of the bid. No other form of bid security will be accepted.

By submitting this bid the undersigned represents to the Owner that it has examined and understands the Advertisement for Bids, Instructions to Bidders, contract forms, Conditions of the Contract (General and Supplementary), Drawings, Specifications and all other Contract Documents and has examined the site, as defined therein, and that this bid is made with distinct reference and relation to all said Contract Documents; but the undersigned declares that in regard to the conditions affecting the work to be done and the labor and materials needed, this bid is based solely on its own investigation and research and not in reliance upon any drawings, surveys, measurements, dimensions, calculations, estimates, or other tests or representations of any employee, officer, agent or consultant of the Owner. By submitting this bid, the undersigned agrees that it shall 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 undersigned 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: CITY OF WORCESTER

A. The undersigned proposes to furnish all labor and materials required for the **WATERPROOFING AND REPAIRS UNION STATION GARAGE at 225 FRANKLIN ST. WORCESTER MA, 01604** in accordance with the accompanying Drawings, Specifications and Addenda, prepared by Nault Architects, Inc., 71 Hope Ave, Worcester MA 01603 for the contract price specified below, subject to additions or deductions according to the terms of the Plans and Specifications.

B. This Bid includes Addenda numbered: ___, ___, ___, ___, ___, ___, ___, ___, ___, ___, ___, ___

C. The Proposed Contract Price is (Total of Items 1 and 2):

_____

_____ Dollars ($ _____)

D. Item 1: The work of the General Bidder, being all work other than that covered by Item 2:

_____

_____Dollars ($ _____)

E. Alternates:

NONE

F. Item 2: The work of Filed Sub-bidders. Fill in the name, sub-bid amount and bonding requirement of selected filed sub-bidders.

SUBTRADE SECTION	NAME OF SUB-BIDDER	SUB-BID AMOUNT	BONDS REQUIRED? "YES" OR "NO"
Section 04 00 01 Masonry Work			
Section 07 00 01 Waterproofing			
Section 21 00 01 Fire Protection			
Section 22 00 01 Plumbing			
Section 26 00 00 Electrical			
TOTAL			

G. The undersigned agrees that the above-named sub-bidders will be used for the work indicated at the amount stated, unless a substitution is made. The undersigned further agrees to pay the premiums of the performance and payment bonds furnished by sub-bidders as requested herein and that all the cost of such premium is included in the amount set forth in ITEM 1 of this bid.

H. The undersigned agrees that, if he is selected as a General Contractor, he will promptly confer with the Awarding Authority on the question of the sub-bidder(s); and that the Awarding Authority may substitute for any Sub-Bid listed above a Sub-Bid filed with the Awarding Authority by another sub-bidder for the sub-trade against whose standing and ability the undersigned makes no objection;

and that the undersigned will use all such finally selected sub-bidder(s) at the amount named in their work as if they had been originally named in this general bid, the total contract price being adjusted to conform thereto.

I. The undersigned agrees that, if he is selected as General Contractor, he 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 or 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 General Contractor and are included in the contract price.

J. The undersigned 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 and that he will comply fully with all laws and regulations applicable to awards made subject to Section 44A of Chapter 149 of the Massachusetts General Laws.

K. 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 penalties of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth under the provisions of Section Twenty-nine F of Chapter Twenty-nine, or any other applicable debarment provisions of any other Chapter of the Massachusetts General Laws or any rule or regulation promulgated there under.

L. The undersigned hereby certifies 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 they will comply fully with all laws and regulations applicable to awards made subject to M.G.L. c.149 sec.44A-J.

_____ Date	_____ Print Name of Bidder
_____ Social Security Number or Federal Identification Number	By: _____ Name of Person Signing Bid and Title
_____ Telephone Number	_____ Business Street Address
_____ Fax Number	_____ City, State and ZIP Code

The Bidder shall fill in the following information about its business organization.

1. If the Bidder is a corporation, indicate the state of incorporation.

President:	State of Incorporation:
Treasurer:	Secretary:
If a Foreign Corporation: (incorporated or organized under laws other than laws of the Commonwealth of Massachusetts)	Is the Corporation registered with the Secretary of State of Massachusetts? Yes _____ No _____
If the Bidder is selected for the work referred to above, it is required under Massachusetts General Laws, Chapter 30, Section 39L to furnish to the Awarding Authority a certificate of the Secretary of State stating that the Corporation has complied with Massachusetts General Laws, Chapter 181, Sections 3 and 5 and the date of such compliance.	

2. If the Bidder is a Partnership, give full names and addresses of all partners:

Name of Partner:	Residence Address:
Name of Partner:	Residence Address:
Name of Partner:	Residence Address:

3. If the Bidder is an Individual, give residential address if different from business address:

Name:	Residence Address:

4. If the Bidder is an Individual doing business under a Firm name:

Name of Firm:	Business Address:
Name of Individual:	Residence Address:

Other forms of business organization:

M. The Bidder will give below the name and address of the Surety Company who will sign the bonds.

Name:	Address:

END OF FORM FOR GENERAL BID

Conflict of Interest Policy

See next page.

Worcester Redevelopment Authority
Peter Dunn, Chief Executive Officer
455 Main Street, Worcester, MA 01608
P| 508-799-1400 **F**| 508-799-1406
development@worcesterma.gov

May 19, 2026

Worcester Regional Transit Authority
60 Foster Street
Worcester, MA 01608

RE: Standards of Conduct; Conflict of Interest

This letter is provided to substantiate the Worcester Redevelopment Authority (WRA)'s compliance, as a "Subrecipient" of Federal Transit Administration (FTA) funding through the Worcester Regional Transit Authority (WRTA), with respect to Section 4(a) of the FTA Master Agreement.

In accordance with the WRA bylaws and the Revised Ordinances of the City of Worcester, the administration of WRA operations, including the procurement of goods, services, and contracts, is carried out by designated municipal personnel. The conduct of all applicable personnel must comply with the Commonwealth of Massachusetts' Conflict of Interest Law (M.G.L Chapter 268A) and Financial Disclosure Law (M.G.L. 268B), which covers the relevant conflict of interest matters outlined in Section 4(a) of the FTA Master Agreement. Applicable personnel also participate in the required training program administered by the State Ethics Commission.

As such, the established "penalties, sanctions or other disciplinary actions for violations" required by Section 4(a)(3) in the FTA Master Agreement are those prescribed in the applicable state law.

Sincerely,

Peter Dunn
Chief Development Officer

CITY OF WORCESTER

FORM FOR SUB—BID

SUB-TRADE: _____

NAME OF SUB-BIDDER: _____

This bid must be accompanied by a bid deposit in the form of a 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 (5) percent of the value of the bid. No other form of bid security will be accepted.

By submitting this bid the undersigned represents to the Owner that it has examined and understands the Advertisement for Bids, Instructions to Bidders, Contract Forms, Conditions of the Contract (General and Supplementary), Drawings, Specifications and all other Contract Documents and has examined the site, as defined therein, and that this bid is made with distinct reference and relation to all said Contract Documents, but the undersigned declares that in regard to the conditions affecting the work to be done and the labor and materials needed, this bid is based solely on its own investigation and research and not in reliance upon any drawings, surveys, measurements, dimensions, calculations, estimates, or other tests or representations of any employee, officer, agent or consultant of the Owner. By submitting this bid, the undersigned agrees that it shall be subject to the jurisdiction of the courts of the Commonwealth of Massachusetts with respect to any actions arising out of or relating to this bid or any contract that may be entered into based upon this bid, and that any such actions commenced by the undersigned 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. See: General Bid Form

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To all General Bidders except those excluded:

A. The undersigned proposes to furnish all labor and materials required for completing the Work specified in Section(s) _____ of the Specifications for the **WATERPROOFING AND REPAIRS UNION STATION GARAGE at 225 FRANKLIN ST. WORCESTER MA, 01604** in accordance with the accompanying Drawings, Specifications and Addenda, prepared by Nault Architects, Inc., 71 Hope Ave, Worcester MA 01603, for the contract price specified below, subject to additions or deductions according to the terms of the Plans and Specifications.

B. This Bid includes Addenda numbered: ___, ___, ___, ___, ___, ___, ___, ___, ___, ___, ___, ___.

C. The Proposed Contract Price is:

_____

_____ Dollars ($ _____)

1. Unit Price:
2. Alternates:

D. To restrict General Bidders, insert "**X**" into one option only and fill in blanks following that selection. If no General Bidders are excluded disregard this item.

_____ **"RESTRICTED FROM"** – This Sub-bid may be used by any General Bidder except:

_____

_____

_____

_____ **"RESTRICTED TO"** – This Sub-bid may be used only by the following General Bidders:

_____

_____

_____

E. The names of all persons, firms and corporations furnishing to the undersigned labor or labor and materials for the class or classes or part thereof of work for which the provisions of the section of the specifications for this sub-trade require a listing in this paragraph, including the undersigned, if customarily furnished by persons on his own payroll and in the absence of a contrary provisions in the specifications, the name of each such class of work or part thereto and the bid price for such class of work or part thereof are:

NAME	CLASS OF WORK	BID PRICE

(Do not give bid price for any class or part thereof furnished by undersigned.)

F. The undersigned agrees that, if he is selected as a sub-bidder, he will, within five (5) days, Saturdays, Sundays and legal holidays excluded, after presentation of a subcontract by the general bidder selected as the general contractor, execute with such General Bidder a subcontract in accordance with the terms of this sub-bid, and contingent upon the execution of the general contract, and, if requested so to do in the general bid by such general bidder, who shall pay the premiums therefore, furnish a performance and payment bond of a surety company qualified to do business under the laws of the Commonwealth of Massachusetts and satisfactory to the awarding authority, in the full sum of the subcontract price.

G. The undersigned agrees that the above list of bids to the undersigned represents bona-fide bids based on herein before described drawings, specifications and addenda and that, if the undersigned is awarded the contract, they will be used for the work indicated at the amounts stated, if satisfactory to the Awarding Authority.

H. The undersigned further agrees to be bound to the General Contractor by the terms of the hereinbefore-described drawings, specifications, including all general conditions stated therein, and addenda, and to assume toward him all the obligations and responsibilities that he, by those documents, assumes toward the Owner.

I. The undersigned offers the following information as evidence of his qualifications to perform the work as bid upon according to all requirements of the drawings and specifications:

1. The undersigned has been in the present business name _____ years.
2. Has the undersigned ever failed to complete any work awarded? _____
3. Provide a Bank Reference: _____
4. List one or more recent project with names of the General Contractor and Architect on which you served as a Subcontractor for work of similar character as required for the above-named project.

PROJECT NAME	GENERAL CONTRACTOR	ARCHITECT	AMOUNT OF CONTRACT

J. The undersigned 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 and that he will comply fully with all laws and regulations applicable to awards made subject to Section 44A of Chapter 149 of the Massachusetts General Laws.

K. 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 penalties of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth under the provisions of Section Twenty-nine F of Chapter Twenty-nine, or any other applicable debarment provisions of any other Chapter of the Massachusetts General Laws or any rule or regulation promulgated there under.

L. The undersigned hereby certifies 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 they will comply fully with all laws and regulations applicable to awards made subject to M.G.L. c.149 sec.44A-J.

_____ Date	_____ Print Name of Bidder
_____ Social Security Number or Federal Identification Number	By _____ Name of Person Signing Bid and Title
_____ Telephone Number	_____ Business Street Address
_____ Fax Number	_____ City, State and ZIP Code

M. The Bidder shall fill in the following information about its business organization.

1. If the Bidder is a Corporation, indicate the state of incorporation.

President:	State of Incorporation:
Treasurer:	Secretary:
If a Foreign Corporation: (incorporated or organized under laws other than laws of the Commonwealth of Massachusetts)	Is the Corporation registered with the Secretary of State of Massachusetts? Yes _____ No _____
If the Bidder is selected for the work referred to above, it is required under Massachusetts General Laws, Chapter 30, Section 39L to furnish to the Awarding Authority a certificate of the Secretary of State stating that the Corporation has complied with Massachusetts General Laws, Chapter 181, Sections 3 and 5 and the date of such compliance.	

2. If the Bidder is a Partnership, give full names and addresses of all partners:

Name of Partner:	Residence Address:
Name of Partner:	Residence Address:
Name of Partner:	Residence Address:
Name of Partner:	Residence Address:

3. If the Bidder is an Individual, give residential address if different from business address:

Name:	Residence Address:

4. If the Bidder is an Individual doing business under a Firm name:

Name of Firm:	Business Address:
Name of Individual:	Residence Address:

5. Other form of business organization:

N. The Bidder will give below the name and address of the Surety Company who will sign the bonds.

Name:	Address:

END OF FORM FOR SUB-BID

THIS AGREEMENT made on _____ , 2026, at Worcester, in the County of Worcester, Commonwealth of Massachusetts by and between XXX., a corporation duly organized and existing under the laws of the Commonwealth of Massachusetts, having a principal place of business at XXX, and duly authorized to conduct business in the Commonwealth of Massachusetts (hereinafter called the Contractor), and the City of Worcester, an independent body politic and corporate organized under c.121B of the General Laws of Massachusetts with its principal office located at City Hall, 4th Floor, 455 Main Street, Worcester MA 01608 (hereinafter called the CITY).

W I T N E S S E T H:

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:

(1) SCOPE OF WORK:

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 to undertake and complete the **WATERPROOFING AND REPAIRS UNION STATION GARAGE at 225 FRANKLIN ST. WORCESTER MA, 01604** (hereinafter called the "Project") in the city of Worcester, Massachusetts, and to accomplish any and all work incidental thereto.

(2) BONDS:

The Contractor shall obtain and deposit with the CITY the following bond(s) in the amount of:

PERFORMANCE BOND: ***XXX***

PAYMENT BOND: ***XXX***

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. Bonds are to be submitted in form outlined in **Exhibit C** – Payment and Performance Bond.

(3) CONTRACTING OFFICER:

(a) Wherever used in this Agreement the term "Contracting Officer" shall mean the CITY official 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 under this Agreement shall be carried out under the direction and subject to the approval and acceptance of the Chief Executive Officer of the CITY.

(b) Anything to the contrary in the preceding paragraph notwithstanding, the City of Worcester's Contract Compliance Officer is and shall be a designee of the Contracting Officer for all notices, demands, sanctions, and other communications relative to such Officer's administration, monitoring, and enforcement of the City of Worcester's Responsible Employer & Inclusionary Participation Policy, unless exempt under such policy. Each and every communication from the Contract Compliance Officer directly to

the Contractor shall be validly delivered notwithstanding any other contrary provision of this Agreement or other Contract Documents.

(4) INCORPORATED DOCUMENTS:

The performance of this Agreement is subject to the provisions of the following documents and intended to be an integral part of this contract (hereinafter periodically and collectively referred to as "the Contract Documents").

(a) Sealed Bid Invitation BID #XXXX-XX issued INSERT DATE (Under separate cover).

(b) Bid Proposal, dated issued XXX (Under separate cover).

(c) Specifications and Related Drawings (Under separate cover).

(5) TIME FOR PERFORMANCE:

Time is of the essence for this Agreement.

The work of this Agreement shall be completed within **90** days from the date of contact execution.

(6) PRICE:

The CITY will pay the Contractor for all materials delivered or furnished and for all the work performed pursuant to Article (1) hereof a sum of money as follows:

XXX (XXX).

(7) PAYMENT:

Payment to the Contractor shall be made by the CITY in accordance with Massachusetts General Laws, Chapter 30, Section 39K, as amended, which is included in the Supplementary General Conditions to the Contract which is incorporated and made a part hereof.

(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, except as may be provided under Article 10(d), 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 execution of the work until its final approval by the Contracting Officer, and for all risks to the Contractor of every description connected with the execution 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 proves to be any such claims 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 Contractors default.

(e) The Contractor, and each subcontractor, at every tier, to the Contractor, 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.

(8) PAYMENT OF SUBCONTRACTORS:

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

(a) The Contractor, and each subcontractor, at every tier, to the Contractor, represents, they are eligible to participate in this federally funded contract and are not presently declared by any Federal department or agency to be debarred or suspended from any federal Assisted Award, as further evidenced in Section 13 – Debarment, Suspension, Ineligibility and Voluntary Exclusion included in **Exhibit B -**Federally Required Contract Clauses

(9) NOTICE:

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 agent for such purpose.

(10) PERFORMANCE:

(a) The Contractor shall give his personal attention constantly to the faithful execution 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 Agreement or any claim thereto unless by and with like consent on the part of the Contracting Officer. He shall be responsible for all the acts and omissions of his employees and of all people directly or indirectly employed by him in connection with the execution 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 removing 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 in accordance with Article 3.4.1 of the General Conditions 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 any part thereof for such period as deemed necessary due to failure of the Contractor to carry out orders given or to perform any provision of the Agreement. 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 shall have no claim for damages of any kind on account of any delay in commencement of the work. 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 Massachusetts General Laws, Chapter 30, Section 39 O, as amended, which is included in the Supplementary General 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 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. The Contractor must submit the amount of a claim under this 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.

(f) 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, which will interfere with the performance of work by any other contractor.

(g) The Contractor shall comply with all the laws, state and federal, applicable to the work and construction provided for herein. 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 law operative 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. 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 of 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.

Required Federal Transit Administration Contracting Clauses. This project is funded part or in whole by a federal grant. The Contractor must comply with the applicable requirements for Services provided in the FTA-issued documents titled, attached hereto as **Exhibit B -** Federally Required Contract Clauses.

(h) When the use of explosives is necessary for the execution 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 of explosives and highly inflammable materials shall conform to all the State Laws and Regulations, as well as any local requirements.

(i) Upon the completion of the work the Contractor shall at his own expense remove all equipment, temporary Contractors' 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.

(j) It shall be a material breach of this Agreement if the Contractor and each subcontractor shall not, at all times, adhere to the provision 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.

(k) Before commencing the work, the Contractor shall, if required, submit a schedule of operations for approval of 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.

(l) Should the Contractor be obstructed or delayed in the execution of the work, 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 therefore is presented in writing to the Contracting Officer within forty-eight (48) hours of the occurrence of such delay. The Contractor shall have no claim against the CITY for damages on account of such delay. The Contracting Officer must certify to the duration of the extension itself.

(11) ADDITIONAL WORK:

(a) The Contractor agrees to perform any work related to the subject matter of the Contract, but not within the original scope of the Agreement and its specifications, upon 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 to the Contract.

(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 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.

(12) EMPLOYMENT:

(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, and then such worker shall be discharged from the work.

(b) In the performance of this Agreement, the Contractor shall comply with the provisions of the City of Worcester's Responsible Employer & Inclusionary Participation Policy, unless exempt under such policy. 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, subcontractors, 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 (8) hours in any one (1) calendar day; or more than forty-eight (48) hours in one (1) week, or more than six (6) days in any one (1) week in full compliance with provisions of Massachusetts General Laws, Chapter 149, Section 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 Department of Health and the Worcester Board of Health.

(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 Massachusetts General Laws 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 contract and shall entitle the CITY to terminate the Agreement without in any way being liable in damages, therefore.

(g) The Contractor shall keep a true and accurate register of all mechanics, teamsters, chauffeurs and laborers employed upon the work contemplated by this Contract, 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 its 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, attached hereto as **Exhibit A** and incorporated herein by this reference. *In addition, to the extent included in this agreement, federal, Davis-Bacon Act wage rates also apply to the work. In the event of a conflict between the state and federal wage rates, the higher rate shall apply.*

(i) The Contractor shall, at all times, comply with the following requirements and shall include these requirements in each subcontract entered into as part thereof:

1. Nondiscrimination. In accordance with Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against any employee or applicant for employment because of race, color, religion, national origin, sex, disability, or age. In addition, the Contractor agrees to comply with applicable Federal implementing regulations and other implementing requirements FTA may issue.

2. **Race, Color, Religion, National Origin, Sex.** In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. § 2000e et seq., and Federal transit laws at 49 U.S.C. § 5332, the Contractor agrees to comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (U.S. DOL) regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 C.F.R. chapter 60, and Executive Order No. 11246, "Equal Employment Opportunity in Federal Employment," September 24, 1965, 42 U.S.C. § 2000e note, as amended by any later Executive Order that amends or supersedes it, referenced in 42 U.S.C. § 2000e note. The Contractor agrees to take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, national origin, or sex (including sexual orientation and gender identity). Such action shall include, but not be limited to, the following: employment, promotion, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

3. **Age**. In accordance with the Age Discrimination in Employment Act, 29 U.S.C. §§ 621- 634, U.S. Equal Employment Opportunity Commission (U.S. EEOC) regulations, "Age Discrimination in Employment Act," 29 C.F.R. part 1625, the Age Discrimination Act of 1975, as amended, 42 U.S.C. § 6101 et seq., U.S. Health and Human Services regulations, "Nondiscrimination on the Basis of Age in Programs or Activities Receiving Federal Financial Assistance," 45 C.F.R. part 90, and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees to refrain from discrimination against present and prospective employees for reason of age. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

4. **Disabilities**. In accordance with section 504 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. § 794, the Americans with Disabilities Act of 1990, as amended, 42 U.S.C. § 12101 et seq., the Architectural Barriers Act of 1968, as amended, 42 U.S.C. § 4151 et seq., and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against individuals on the basis of disability. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

(j) Contractor and subcontractor shall abide by the requirements of 41 CFR 60-1.4(a), 60-300.5(a) and 60- 741.5(a), prohibiting discrimination against qualified individuals based on their status as protected veterans or individuals with disabilities, and prohibit discrimination against all individuals based on their race, color, religion, sex, sexual orientation, gender identity or national origin. Moreover, these regulations require that covered prime contractors and subcontractors take affirmative action to employ and advance in employment individuals without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, disability or veteran status.

(k) For all prime construction, alteration or repair contracts in excess of $2,000 awarded by FTA, the Contractor shall comply with the Davis-Bacon Act and the Copeland "Anti-Kickback" Act. Under 49 U.S.C. §5333(a), prevailing wage protections apply to laborers and mechanics employed on FTA assisted construction, alteration, or repair projects. The Contractor will comply with the Davis-Bacon Act, 40 U.S.C. §§ 3141-3144, and 3146-3148 as supplemented by DOL regulations at 29 C.F.R. part 5, "Labor Standards Provisions Applicable to Contracts Governing Federally Financed and Assisted Construction." In accordance with the statute, the Contractor shall pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, the Contractor agrees to pay wages not less than once a week. The Contractor shall also comply with the Copeland "Anti-Kickback" Act (40 U.S.C. § 3145), as supplemented by DOL regulations at 29 C.F.R. part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in part by Loans or Grants from the United States." The Contractor is prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled.

(13) TERMINATION:

(a) If the Contractor shall be adjudged as 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 of shall be sublet without the previous written consent of the Contracting Officer, or if the Contract or any claim there under 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 (5) 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 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 contract or any part thereof, or for ensuring 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, therefore.

(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 hereunder shall survive any termination hereunder.

(14) GUARANTEES:

(a) The Contractor guarantees the work under this Contract and the materials furnished by him for use in connection therewith to be free from defects or flaws for one (1) year after the completion of the work unless a greater period of time is prescribed by Law, or by terms of any special guarantee required under any other provisions of the Contract Documents. It is expressly understood, however, that this guaranteed 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 contract 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 (10) 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.

(15) INDEMNIFICATION:

(a) The Contractor shall indemnify and save harmless the CITY, 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 the Contractor in the performance of the work covered by the Agreement 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 and 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.

(16) INSURANCE:

(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 Department 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) In addition to that set forth in the Contract Documents, the amounts of such public liability insurance shall not be less than the minimum amounts set forth below:

1. Workmen's Compensation -Statutory/Employers Liability $500,000.

2. Commercial General Liability - Per Occurrence / Aggregate $1,000.000 / $2,000,000.

3. Commercial Property “All Risk” Insurance covering real and personal property at the site, including coverage for project equipment at full replacement cost.

4. Automobile Liability – Combined Single Limit of $1,000,000.

5. Bodily Injury & Property Damage combined single limit of $1,000,000 (all owned, hired and non-owned autos).

6. Excess / Umbrella Liability – Per Occurrence / Aggregate $1,000,000 / $2,000,000.

(e) **In addition to that set forth 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) The Certificate Holder shall be Chief Executive Officer, City of Worcester, City of Worcester, 455 Main Street, Worcester, MA 01608.

(g) The City of Worcester shall be an Additional Insured of all coverage (except for workers compensation) regarding this project. Said Additional Insurance status shall be on a "primary and non-contributory" basis. 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. The Contractor shall provide a waiver of subrogation favoring the CITY for such coverage.

(17) CONFLICT OF INTEREST:

(a) The Contractor warrants that he has complied with all provisions of law regarding the award of this Contract and that he, or his employees, agents, officers, directors or trustees have not offered or attempted to offer anything of any value to any employee of the CITY or the City of Worcester in connection herewith.

(b) The Contractor further warrants that no elected official or employee of the CITY or the City of Worcester, including unpaid members of City boards and commissions, serves as an officer, director, trustee or employee of Contractor, and that no elected officials or employees of the CITY or the City of Worcester have or will have a direct or indirect financial interest in this Agreement.

(c) Violation of this Article shall be a material breach of this Agreement and shall be grounds for immediate termination hereof by the CITY without regard to any enforcement activities undertaken or completed by any enforcement agency. Termination of this Agreement pursuant to this Article shall not waive any claims for damages the CITY may have against the Contractor resulting from the Contractor's violation of the terms of this Article.

(18) SEVERABILITY:

(a) If any court or body of competent jurisdiction holds any provisions of this Agreement invalid, the remainder of this Agreement shall remain in full force and effect.

(19) HEADINGS:

(a) 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.

(20) AMENDMENTS:

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

(21) ENTIRE AGREEMENT:

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

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK; SIGNATURE PAGE TO FOLLOW]

IN WITNESS WHEREOF the parties hereto, intending to be legally bound, have caused this Agreement to be executed as a sealed instrument by their duly authorized representatives the day and year first above written.

CITY OF WORCESTER

_____
Eric D. Batista
City Manager

CONTRACTOR
XXX

_____
XXX
XXX (SEAL)

RECOMMENDED:
City of Worcester

_____
James Bedard, Chief
Department of Public Facilities

Approved As To Form

_____
Alexandra H. Kalkounis
Chief Legal Counsel

I certify funds are available for this agreement.

_____
Timothy J. McGourthy
Chief Financial Officer

EXHIBIT A

MA PREVAILING WAGE RATES & DAVIS BACON WAGE RATES

PREVAILING WAGE RATES

&

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:	Address:	Phone No.:	Payroll No.:

Employer's Signature:	Title:	Contract No:	Tax Payer ID Number	Work Week Ending:

Awarding Authority's Name:	Public Works Project Name:	Public Works Project Location:	Min. Wage Rate Sheet Number

General / Prime Contractor's Name:	Subcontractor's Name:		"Employer" Hourly Fringe Benefit Contributions

Employee Name & Complete Address	Work Classification:	Employee is OSHA 10 certified (?)	Appr. Rate (%)	Hours Worked Su.	Mo.	Tu.	We.	Th.	Fr.	Sa.	Project Hours (A) / All Other Hours	Hourly Base Wage (B)	Health & Welfare Insurance (C)	ERISA Pension Plan (D)	Supp. Unemp. (E) (B+C+D+E)	Total Hourly Prev. Wage (F) (A x F)	Project Gross Wages / Total Gross Wages	Check No. (H)

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

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

No apprentices are identified above ☐

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

Date Received by Awarding Authority
/ /

CITY OF WORCESTER

Monthly Workforce Report

PROJECT NAME_____

Construction Manager: _____

Project: _____ Contract #:_____

Period Covered: _____ through _____

		GOAL - 38%		GOAL - 10%			
PROJECT-TO-DATE:		**PEOPLE OF COLOR**		**FEMALE**		**MINORITY OWNED**	**WOMEN OWNED**
Contractor/Sub-Contractor	**Total Hours**	PTD Hours	PTD Percentage	PTD Hours	PTD 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 Hours	PTD Percentage	PTD Hours	PTD 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:

STATEMENT OF COMPLIANCE

_____, 20_____

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

do hereby state:

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

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

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

Signature _____

Title _____

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

MAURA HEALEY
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:	Worcester	**City/Town:**	WORCESTER
Wage Request No:	20260929162026	**Job Location:**	225 FRANKLIN ST. WORCESTER MA, 01604
Description of Work:	A new sump pit and pump in the elevator shaft, repairs to concrete and masonry, application of new waterproofing systems, partial roof replacement, revisions to the sprinkler, fire alarm and electrical systems.		
Contract Number:	8833-M7		

§§ 26-27D Construction Project

This Prevailing Wage Schedule establishes the minimum wage rates that employees on this public works construction project must be paid. The project's Wage Request Number is listed above and on all pages of this Schedule. This schedule applies **only** to this specific project.

Awarding Authority Responsibilities

- You must include this Prevailing Wage Schedule (PWS) or an appropriate reference to it in all advertisements and calls for bids.
- The PWS must be incorporated in its entirety into all contracts for this project (G.L. c. 149, § 27).
- The wage rates on this PWS will remain in effect for the duration of the project. **Exception:** You must request an updated schedule for any multi-year construction project no later than 2 weeks before the project's yearly anniversary date.
  - For CM AT RISK projects, the anniversary date is the earlier of the signing date of: (a) the GMP Amendment; or (b) the first amendment to permit procurement of construction services.
  - For all other construction projects, the anniversary date is the date the contract was signed by the Awarding Authority and the General Contractor.
- You must also request an updated PWS if you have not opened bids or selected a contractor within 90 days of the date of issuance on this PWS.
  - For CM AT RISK projects, the earlier of (a) the signing date of the GMP Amendment; or (b) the bid for the first construction scope of work must be within 90 days of the date of issuance on this Schedule.
- You must provide any updated PWS to all contractors working on the project, including general and sub-contractors.
- You must keep the contractors' weekly certified payroll records and Statements of Compliance on file for **3 years.**
- Awarding authorities have other prevailing wage responsibilities not listed above. Learn more at: **[Prevailing wage: for awarding authorities | Mass.gov]** and G.L. c. 149, §§ 26-27D.

Contractor Responsibilities

- You must pay all employees who perform construction work on this project at least the wage rate listed on this PWS. **Warning!** If you do not follow this requirement, you can face civil fines, criminal charges, or private lawsuits.
- You must post this PWS at the worksite where it can be easily seen. (G.L. c. 149, § 27)
- You must file weekly payroll reports and a Statement of Compliance with the awarding authority (**not** DLS). You can file payroll reports by mail or email and must keep them on file for 3 years. Each weekly payroll report must include each employees' name, address, occupational classification(s), hours worked, and wages paid. Find a sample report at: mass.gov/dols/pw.
- You cannot pay any employees at the apprentice rates listed on this PWS unless they are registered with the Massachusetts Division of Apprentice Standards (DAS). Qualifying apprentices must be paid at the applicable step rate and must carry their apprentice ID card during all work hours on the project. Apprentices **not** registered with DAS must be paid at the listed journeyworker's rate, even if they are registered with a different federal/state public agency or private entity. For every week in which apprentice rates are paid, a copy of each apprentice's apprentice ID card issued by DAS shall be attached to the certified payroll records.
- If you don't know what classification or rate applies to the work being performed, you must ask DLS; paying the wrong rate subjects you to enforcement.
- Please contact DLS if you have any questions about the Prevailing Wage Schedule: (617) 626-6953 or **DLS.Feedback@mass.gov**

Employees who are **not** paid the wage listed on the Prevailing Wage Schedule (PWS) may file a complaint with the Attorney General's Fair Labor

Division: **www.mass.gov/ago/fld**; **(617) 727-3465.**

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
(2 AXLE) DRIVER - EQUIPMENT TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	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 TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	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 TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	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) For apprentice rates see "Apprentice- PILE DRIVER"	8/1/2024	$117.16	$10.08	$11.62	$12.67	$0.00	$151.53
AIR TRACK OPERATOR LABORERS LABORERS - ZONE 2	6/1/2026	$42.41	$10.90	$9.75	$9.11	$0.00	$72.17
	12/1/2026	$43.85	$10.90	$9.75	$9.11	$0.00	$73.61
	6/1/2027	$45.30	$10.90	$9.75	$9.11	$0.00	$75.06
	12/1/2027	$46.75	$10.90	$9.75	$9.11	$0.00	$76.51
	6/1/2028	$48.25	$10.90	$9.75	$9.11	$0.00	$78.01
	12/1/2028	$49.75	$10.90	$9.75	$9.11	$0.00	$79.51
For apprentice rates see "Apprentice- LABORER"							
AIR TRACK OPERATOR (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	$42.41	$10.90	$9.75	$9.21	$0.00	$72.27
	12/1/2026	$43.85	$10.90	$9.75	$9.21	$0.00	$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
ASBESTOS WORKER (PIPES & TANKS) HEAT & FROST INSULATORS LOCAL 6 HEAT & FROST INSULATORS LOCAL 6 (WORCESTER)	12/1/2025	$44.80	$14.50	$4.30	$6.75	$0.00	$70.35
ASPHALT RAKER LABORERS LABORERS - ZONE 2	6/1/2026	$41.91	$10.90	$9.75	$9.11	$0.00	$71.67
	12/1/2026	$43.35	$10.90	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$44.80	$10.90	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.25	$10.90	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$47.75	$10.90	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.25	$10.90	$9.75	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
ASPHALT RAKER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	$41.91	$10.90	$9.75	$9.21	$0.00	$71.77
	12/1/2026	$43.35	$10.90	$9.75	$9.21	$0.00	$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$59.38	$17.05	$13.35	$3.25	$0.00	$93.03
	12/1/2026	$60.83	$17.05	$13.35	$3.25	$0.00	$94.48
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
BACKHOE/FRONT-END LOADER	6/1/2026	$59.38	$17.05	$13.35	$3.25	$0.00	$93.03
OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2026	$60.83	$17.05	$13.35	$3.25	$0.00	$94.48
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
BARCO-TYPE JUMPING TAMPER	6/1/2026	$41.91	$10.90	$9.75	$9.11	$0.00	$71.67
LABORERS LABORERS - ZONE 2	12/1/2026	$43.35	$10.90	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$44.80	$10.90	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.25	$10.90	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$47.75	$10.90	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.25	$10.90	$9.75	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
BLOCK PAVER, RAMMER / CURB SETTER	6/1/2026	$42.41	$10.90	$9.75	$9.11	$0.00	$72.17
LABORERS LABORERS - ZONE 2	12/1/2026	$43.85	$10.90	$9.75	$9.11	$0.00	$73.61
	6/1/2027	$45.30	$10.90	$9.75	$9.11	$0.00	$75.06
	12/1/2027	$46.75	$10.90	$9.75	$9.11	$0.00	$76.51
	6/1/2028	$48.25	$10.90	$9.75	$9.11	$0.00	$78.01
	12/1/2028	$49.75	$10.90	$9.75	$9.11	$0.00	$79.51
For apprentice rates see "Apprentice- LABORER"							
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY)	6/1/2026	$42.41	$10.90	$9.75	$9.21	$0.00	$72.27
LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2026	$43.85	$10.90	$9.75	$9.21	$0.00	$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
BOILER MAKER BOILERMAKERS LOCAL 29 BOILERMAKERS LOCAL 29	1/1/2024	$48.12	$7.07	$14.60	$6.00	$0.00	$75.79

Apprentice: BOILER MAKER

Effective Date: 1/1/2024

Step	Percent	Apprentice Base Wage	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

Apprentice to Journeyworker Ratio: 1:4

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)	8/1/2026	$68.01	$12.84	$15.57	$7.33	$0.00	$103.75
BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 (WORCESTER)	2/1/2027	$69.41	$12.84	$15.57	$7.33	$0.00	$105.15

Apprentice: BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)

Effective Date: 8/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$34.01	$12.84	$15.57	$7.33	$0.00	$69.75
2	60.00	$40.81	$12.84	$15.57	$7.33	$0.00	$76.55
3	70.00	$47.61	$12.84	$15.57	$7.33	$0.00	$83.35
4	80.00	$54.41	$12.84	$15.57	$7.33	$0.00	$90.15
5	90.00	$61.21	$12.84	$15.57	$7.33	$0.00	$96.95

Apprentice: BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)

Effective Date: 2/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$34.71	$12.84	$15.57	$7.33	$0.00	$70.45
2	60.00	$41.65	$12.84	$15.57	$7.33	$0.00	$77.39
3	70.00	$48.59	$12.84	$15.57	$7.33	$0.00	$84.33
4	80.00	$55.53	$12.84	$15.57	$7.33	$0.00	$91.27
5	90.00	$62.47	$12.84	$15.57	$7.33	$0.00	$98.21

Apprentice to Journeyworker Ratio: 1:5

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
BULLDOZER/GRADER/SCRAPER OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$58.70	$17.05	$13.35	$3.25	$0.00	$92.35
	12/1/2026	$60.14	$17.05	$13.35	$3.25	$0.00	$93.79
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
CAISSON & UNDERPINNING BOTTOM MAN LABORERS LABORERS - FOUNDATION AND MARINE	6/1/2026	$50.40	$10.90	$9.75	$9.80	$0.00	$80.85
	12/1/2026	$51.90	$10.90	$9.75	$9.80	$0.00	$82.35
For apprentice rates see "Apprentice- LABORER"							
CAISSON & UNDERPINNING LABORER LABORERS LABORERS - FOUNDATION AND MARINE	6/1/2026	$49.25	$10.90	$9.75	$9.80	$0.00	$79.70
	12/1/2026	$50.75	$10.90	$9.75	$9.80	$0.00	$81.20
For apprentice rates see "Apprentice- LABORER"							
CAISSON & UNDERPINNING TOP MAN LABORERS LABORERS - FOUNDATION AND MARINE	6/1/2026	$49.58	$10.90	$9.75	$9.80	$0.00	$80.03
	12/1/2026	$51.08	$10.90	$9.75	$9.80	$0.00	$81.53
For apprentice rates see "Apprentice- LABORER"							
CARBIDE CORE DRILL OPERATOR LABORERS LABORERS - ZONE 2	6/1/2026	$41.91	$10.90	$9.75	$9.11	$0.00	$71.67
	12/1/2026	$43.35	$10.90	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$44.80	$10.90	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.25	$10.90	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$47.75	$10.90	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.25	$10.90	$9.75	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
CARPENTER	9/1/2026	$52.10	$11.08	$11.47	$8.50	$0.00	$83.15
CARPENTERS CARPENTERS -ZONE 2 (Eastern Massachusetts)	3/1/2027	$53.35	$11.08	$11.47	$8.50	$0.00	$84.40

Apprentice: CARPENTER

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$23.45	$11.08	$0.00	$1.73	$0.00	$36.26
2	45.00	$23.45	$11.08	$0.00	$1.73	$0.00	$36.26
3	55.00	$28.66	$11.08	$0.00	$3.40	$0.00	$43.14
4	55.00	$28.66	$11.08	$0.00	$3.40	$0.00	$43.14
5	70.00	$36.47	$11.08	$11.41	$5.10	$0.00	$64.06
6	70.00	$36.47	$11.08	$11.41	$5.10	$0.00	$64.06
7	80.00	$41.68	$11.08	$11.44	$6.80	$0.00	$71.00
8	80.00	$41.68	$11.08	$11.44	$6.80	$0.00	$71.00

Apprentice: CARPENTER

Effective Date: 3/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$24.01	$11.08	$0.00	$1.73	$0.00	$36.82
2	45.00	$24.01	$11.08	$0.00	$1.73	$0.00	$36.82
3	55.00	$29.34	$11.08	$0.00	$3.40	$0.00	$43.82
4	55.00	$29.34	$11.08	$0.00	$3.40	$0.00	$43.82
5	70.00	$37.35	$11.08	$11.41	$5.10	$0.00	$64.94
6	70.00	$37.35	$11.08	$11.41	$5.10	$0.00	$64.94
7	80.00	$42.68	$11.08	$11.44	$6.80	$0.00	$72.00
8	80.00	$42.68	$11.08	$11.44	$6.80	$0.00	$72.00

Apprentice to Journeyworker Ratio: 1:5

CARPENTER WOOD FRAME CARPENTERS CARPENTERS-ZONE 3 (Wood Frame)	10/1/2026	$28.47	$7.38	$4.47	$1.00	$0.00	$41.32

All Aspects of New Wood Frame Work

Apprentice: CARPENTER WOOD FRAME

Effective Date: 10/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$17.08	$7.38	$0.00	$0.00	$0.00	$24.46
2	60.00	$17.08	$7.38	$0.00	$0.00	$0.00	$24.46
3	65.00	$18.51	$7.38	$0.00	$1.00	$0.00	$26.89
4	70.00	$19.93	$7.38	$0.00	$1.00	$0.00	$28.31
5	75.00	$21.35	$7.38	$3.80	$1.00	$0.00	$33.53
6	80.00	$22.78	$7.38	$3.80	$1.00	$0.00	$34.96

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

Apprentice: CARPENTER WOOD FRAME

Effective Date: 10/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
7	85.00	$24.20	$7.38	$3.80	$1.00	$0.00	$36.38
8	90.00	$25.62	$7.38	$3.80	$1.00	$0.00	$37.80

Apprentice to Journeyworker Ratio: 1:5

CEMENT MASONRY/PLASTERING PLASTERERS AND CEMENT MASONS LOCAL 534 Plasterers and Cement Masons - Zone 1	7/1/2026	$54.49	$13.35	$16.43	$7.78	$1.80	$93.85
	1/1/2027	$55.94	$13.35	$16.43	$7.78	$1.80	$95.30
	7/1/2027	$57.29	$13.35	$16.43	$7.78	$1.80	$96.65
	1/1/2028	$58.64	$13.35	$16.43	$7.78	$1.80	$98.00

Apprentice: CEMENT MASONRY/PLASTERING

Effective Date: 7/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$27.25	$13.35	$16.43	$0.00	$0.00	$57.03
2	60.00	$32.69	$13.35	$16.43	$7.78	$1.80	$72.05
3	65.00	$35.42	$13.35	$16.43	$7.78	$1.80	$74.78
4	70.00	$38.14	$13.35	$16.43	$7.78	$1.80	$77.50
5	75.00	$40.87	$13.35	$16.43	$7.78	$1.80	$80.23
6	80.00	$43.59	$13.35	$16.43	$7.78	$1.80	$82.95
7	90.00	$49.04	$13.35	$16.43	$7.78	$0.00	$86.60

Apprentice: CEMENT MASONRY/PLASTERING

Effective Date: 1/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$27.97	$13.35	$16.43	$0.00	$0.00	$57.75
2	60.00	$33.56	$13.35	$16.43	$7.78	$1.80	$72.92
3	65.00	$36.36	$13.35	$16.43	$7.78	$1.80	$75.72
4	70.00	$39.16	$13.35	$16.43	$7.78	$1.80	$78.52
5	75.00	$41.96	$13.35	$16.43	$7.78	$1.80	$81.32
6	80.00	$44.75	$13.35	$16.43	$7.78	$1.80	$84.11
7	90.00	$50.35	$13.35	$16.43	$0.00	$0.00	$80.13

Apprentice to Journeyworker Ratio: 1:5

CHAIN SAW OPERATOR LABORERS LABORERS - ZONE 2	6/1/2026	$41.91	$10.90	$9.75	$9.11	$0.00	$71.67
	12/1/2026	$43.35	$10.90	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$44.80	$10.90	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.25	$10.90	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$47.75	$10.90	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.25	$10.90	$9.75	$9.11	$0.00	$79.01

For apprentice rates see "Apprentice- LABORER"

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES	6/1/2026	$60.61	$17.05	$13.35	$3.25	$0.00	$94.26
OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2026	$62.09	$17.05	$13.35	$3.25	$0.00	$95.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
COMPRESSOR OPERATOR	6/1/2026	$37.63	$17.05	$13.35	$3.25	$0.00	$71.28
OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2026	$38.58	$17.05	$13.35	$3.25	$0.00	$72.23
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
DELEADER (BRIDGE) PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 2	1/1/2026	$59.56	$10.35	$12.00	$12.60	$0.00	$94.51

Apprentice: DELEADER (BRIDGE)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$29.78	$10.35	$0.00	$0.00	$0.00	$40.13
2	55.00	$32.76	$10.35	$0.00	$6.93	$0.00	$50.04
3	60.00	$35.74	$10.35	$0.00	$7.56	$0.00	$53.65
4	65.00	$38.71	$10.35	$0.00	$8.19	$0.00	$57.25
5	70.00	$41.69	$10.35	$12.00	$8.82	$0.00	$72.86
6	75.00	$44.67	$10.35	$12.00	$9.45	$0.00	$76.47
7	80.00	$47.65	$10.35	$12.00	$10.08	$0.00	$80.08
8	90.00	$53.60	$10.35	$12.00	$11.34	$0.00	$87.29

Apprentice to Journeyworker Ratio: 1:1

DEMO: ADZEMAN LABORERS LABORERS - ZONE 2	6/1/2026	$49.30	$10.90	$9.75	$9.65	$0.00	$79.60
	12/7/2026	$50.80	$10.90	$9.75	$9.65	$0.00	$81.10
	6/7/2027	$52.40	$10.90	$9.75	$9.65	$0.00	$82.70
	12/6/2027	$54.00	$10.90	$9.75	$9.65	$0.00	$84.30
	6/5/2028	$55.68	$10.90	$9.75	$9.65	$0.00	$85.98
	12/4/2028	$57.35	$10.90	$9.75	$9.65	$0.00	$87.65
For apprentice rates see "Apprentice- LABORER"							
DEMO: BACKHOE/LOADER/HAMMER OPERATOR LABORERS LABORERS - ZONE 2	6/1/2026	$50.30	$10.90	$9.75	$9.65	$0.00	$80.60
	12/7/2026	$51.80	$10.90	$9.75	$9.65	$0.00	$82.10
	6/7/2027	$53.40	$10.90	$9.75	$9.65	$0.00	$83.70
	12/6/2027	$55.00	$10.90	$9.75	$9.65	$0.00	$85.30
	6/5/2028	$56.68	$10.90	$9.75	$9.65	$0.00	$86.98
	12/4/2028	$58.35	$10.90	$9.75	$9.65	$0.00	$88.65
For apprentice rates see "Apprentice- LABORER"							
DEMO: BURNERS LABORERS LABORERS - ZONE 2	6/1/2026	$50.05	$10.90	$9.75	$9.65	$0.00	$80.35
	12/7/2026	$51.55	$10.90	$9.75	$9.65	$0.00	$81.85
	6/7/2027	$53.15	$10.90	$9.75	$9.65	$0.00	$83.45
	12/6/2027	$54.75	$10.90	$9.75	$9.65	$0.00	$85.05
	6/5/2028	$56.43	$10.90	$9.75	$9.65	$0.00	$86.73
	12/4/2028	$58.10	$10.90	$9.75	$9.65	$0.00	$88.40

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"							
DEMO: CONCRETE CUTTER/SAWYER LABORERS LABORERS - ZONE 2	6/1/2026	$50.30	$10.90	$9.75	$9.65	$0.00	$80.60
	12/7/2026	$51.80	$10.90	$9.75	$9.65	$0.00	$82.10
	6/7/2027	$53.40	$10.90	$9.75	$9.65	$0.00	$83.70
	12/6/2027	$55.00	$10.90	$9.75	$9.65	$0.00	$85.30
	6/5/2028	$56.68	$10.90	$9.75	$9.65	$0.00	$86.98
	12/4/2028	$58.35	$10.90	$9.75	$9.65	$0.00	$88.65
For apprentice rates see "Apprentice- LABORER"							
DEMO: JACKHAMMER OPERATOR LABORERS LABORERS - ZONE 2	6/1/2026	$50.05	$10.90	$9.75	$9.65	$0.00	$80.35
	12/7/2026	$51.55	$10.90	$9.75	$9.65	$0.00	$81.85
	6/7/2027	$53.15	$10.90	$9.75	$9.65	$0.00	$83.45
	12/6/2027	$54.75	$10.90	$9.75	$9.65	$0.00	$85.05
	6/5/2028	$56.43	$10.90	$9.75	$9.65	$0.00	$86.73
	12/4/2028	$58.10	$10.90	$9.75	$9.65	$0.00	$88.40
For apprentice rates see "Apprentice- LABORER"							
DEMO: WRECKING LABORER LABORERS LABORERS - ZONE 2	6/1/2026	$49.30	$10.90	$9.75	$9.65	$0.00	$79.60
	12/7/2026	$50.80	$10.90	$9.75	$9.65	$0.00	$81.10
	6/7/2027	$52.40	$10.90	$9.75	$9.65	$0.00	$82.70
	12/6/2027	$54.00	$10.90	$9.75	$9.65	$0.00	$84.30
	6/5/2028	$55.68	$10.90	$9.75	$9.65	$0.00	$85.98
	12/4/2028	$57.35	$10.90	$9.75	$9.65	$0.00	$87.65
For apprentice rates see "Apprentice- LABORER"							
DIRECTIONAL DRILL MACHINE OPERATOR OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$58.70	$17.05	$13.35	$3.25	$0.00	$92.35
	12/1/2026	$60.14	$17.05	$13.35	$3.25	$0.00	$93.79
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
DIVER PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 2)	8/1/2024	$78.11	$10.08	$11.62	$12.67	$0.00	$112.48
as of 8-1-24, Apprentices with diving licenses begin at second year. % of Diver wage 70/80/90 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 Total 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	7/1/2020	$26.77	$6.67	$3.93	$0.00	$0.16	$37.53

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
DRAWBRIDGE - SEIU LOCAL 888							
ELECTRICIAN ELECTRICIANS LOCAL 96 ELECTRICIANS LOCAL 96	9/6/2026	$49.38	$15.96	$14.57	$5.43	$0.00	$85.34

Apprentice: ELECTRICIAN

Effective Date: 9/6/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$19.75	$15.96	$0.59	$0.00	$0.00	$36.30
2	45.00	$22.22	$15.96	$0.67	$0.00	$0.00	$38.85
3	48.00	$23.70	$15.96	$13.80	$2.61	$0.00	$56.07
4	55.00	$27.16	$15.96	$13.90	$2.99	$0.00	$60.01
5	65.00	$32.10	$15.96	$14.05	$3.53	$0.00	$65.64
6	80.00	$39.50	$15.96	$14.28	$4.35	$0.00	$74.09

Apprentice to Journeyworker Ratio: 2:3

ELEVATOR CONSTRUCTOR ELEVATOR CONSTRUCTORS LOCAL 41 ELEVATOR CONSTRUCTORS LOCAL 41	1/1/2026	$69.23	$16.38	$11.06	$10.70	$0.00	$107.37
	1/1/2027	$72.23	$16.48	$11.16	$11.00	$0.00	$110.87

Apprentice: ELEVATOR CONSTRUCTOR

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$34.62	$16.38	$0.00	$0.00	$0.00	$51.00
2	55.00	$38.08	$16.38	$11.06	$10.70	$0.00	$76.22
3	65.00	$45.00	$16.38	$11.06	$10.70	$0.00	$83.14
4	70.00	$48.46	$16.38	$11.06	$10.70	$0.00	$86.60
5	80.00	$55.38	$16.38	$11.06	$10.70	$0.00	$93.52

Apprentice: ELEVATOR CONSTRUCTOR

Effective Date: 1/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$36.12	$16.48	$0.00	$0.00	$0.00	$52.60
2	55.00	$39.73	$16.48	$11.16	$11.00	$0.00	$78.37
3	65.00	$46.95	$16.48	$11.16	$11.00	$0.00	$85.59
4	70.00	$50.56	$16.48	$11.16	$11.00	$0.00	$89.20
5	80.00	$57.78	$16.48	$11.16	$11.00	$0.00	$96.42

Apprentice to Journeyworker Ratio: 1:1

ELEVATOR CONSTRUCTOR HELPER ELEVATOR CONSTRUCTORS LOCAL 41 ELEVATOR CONSTRUCTORS LOCAL 41	1/1/2026	$48.46	$16.38	$11.06	$10.70	$0.00	$86.60
	1/1/2027	$50.56	$16.48	$11.16	$11.00	$0.00	$89.20

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"							
FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY)	6/1/2026	$41.91	$10.90	$9.75	$9.21	$0.00	$71.77
LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2026	$43.35	$10.90	$9.75	$9.21	$0.00	$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY	5/1/2026	$54.40	$16.55	$13.35	$3.25	$0.00	$87.55
OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	11/1/2026	$55.69	$16.55	$13.35	$3.25	$0.00	$88.84
	5/1/2027	$57.12	$16.55	$13.35	$3.25	$0.00	$90.27
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY	5/1/2026	$56.02	$16.55	$13.35	$3.25	$0.00	$89.17
OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	11/1/2026	$57.32	$16.55	$13.35	$3.25	$0.00	$90.47
	5/1/2027	$58.77	$16.55	$13.35	$3.25	$0.00	$91.92
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY	5/1/2026	$26.28	$16.55	$13.35	$3.25	$0.00	$59.43
OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	11/1/2026	$27.04	$16.55	$13.35	$3.25	$0.00	$60.19
	5/1/2027	$27.89	$16.55	$13.35	$3.25	$0.00	$61.04
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FIRE ALARM INSTALLER ELECTRICIANS LOCAL 96 ELECTRICIANS LOCAL 96	9/6/2026	$49.38	$15.96	$14.57	$5.43	$0.00	$85.34
For apprentice rates see "Apprentice- ELECTRICIAN"							
FIRE ALARM REPAIR / MAINT/COMMISSIONING ELECTRICIANS LOCAL 96 ELECTRICIANS LOCAL 96	9/6/2026	$49.38	$15.96	$14.57	$5.43	$0.00	$85.34
For apprentice rates see "Apprentice- ELECTRICIAN"							
FIREMAN (ASST. ENGINEER)	6/1/2026	$47.55	$17.05	$13.35	$3.25	$0.00	$81.20
OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2026	$48.73	$17.05	$13.35	$3.25	$0.00	$82.38
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FLAGGER & SIGNALER (HEAVY & HIGHWAY)	6/1/2026	$29.21	$10.90	$9.75	$9.21	$0.00	$59.07
LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2026	$29.21	$10.90	$9.75	$9.21	$0.00	$59.07
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
FLOORCOVERER FLOORCOVERERS LOCAL 2168 FLOORCOVERERS LOCAL 2168 ZONE II	3/1/2024	$48.93	$10.33	$11.47	$8.80	$0.00	$79.53

Apprentice: FLOORCOVERER

Effective Date: 3/1/2024

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.47	$10.33	$0.00	$1.76	$0.00	$36.56

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

Apprentice: FLOORCOVERER

Effective Date: 3/1/2024

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
2	55.00	$26.91	$10.33	$0.00	$1.76	$0.00	$39.00
3	60.00	$29.36	$10.33	$0.00	$3.52	$0.00	$43.21
4	65.00	$31.80	$10.33	$0.00	$3.52	$0.00	$45.65
5	70.00	$34.25	$10.33	$11.47	$5.28	$0.00	$61.33
6	75.00	$36.70	$10.33	$11.47	$5.28	$0.00	$63.78
7	80.00	$39.14	$10.33	$11.47	$7.04	$0.00	$67.98
8	85.00	$41.59	$10.33	$11.47	$7.04	$0.00	$70.43

Apprentice Notes

Steps are 750 hrs.

Apprentice to Journeyworker Ratio: 1:1

FORK LIFT/CHERRY PICKER OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$59.38	$17.05	$13.35	$3.25	$0.00	$93.03
	12/1/2026	$60.83	$17.05	$13.35	$3.25	$0.00	$94.48

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

GENERATOR/LIGHTING PLANT/HEATERS OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$37.63	$17.05	$13.35	$3.25	$0.00	$71.28
	12/1/2026	$38.58	$17.05	$13.35	$3.25	$0.00	$72.23

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) GLAZIERS LOCAL 35 GLAZIERS LOCAL 35 (ZONE 2)	1/1/2026	$49.06	$10.35	$12.00	$12.60	$0.00	$84.01

Apprentice: GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.53	$10.35	$0.00	$0.00	$0.00	$34.88
2	55.00	$26.98	$10.35	$0.00	$6.88	$0.00	$44.21
3	60.00	$29.44	$10.35	$0.00	$7.50	$0.00	$47.29
4	65.00	$31.89	$10.35	$0.00	$8.13	$0.00	$50.37
5	70.00	$34.34	$10.35	$12.00	$8.75	$0.00	$65.44
6	75.00	$36.80	$10.35	$12.00	$9.38	$0.00	$68.53
7	80.00	$39.25	$10.35	$12.00	$10.00	$0.00	$71.60
8	90.00	$44.15	$10.35	$12.00	$11.25	$0.00	$77.75

Apprentice to Journeyworker Ratio: 1:1

HOISTING ENGINEER/CRANES/GRADALLS OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$59.38	$17.05	$13.35	$3.25	$0.00	$93.03
	12/1/2026	$60.83	$17.05	$13.35	$3.25	$0.00	$94.48

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

Apprentice: HOISTING ENGINEER/CRANES/GRADALLS

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	$32.66	$0.00	$0.00	$0.00	$0.00	$32.66
2	60.00	$35.63	$17.05	$13.35	$3.25	$0.00	$69.28
3	65.00	$38.60	$17.05	$13.35	$3.25	$0.00	$72.25
4	70.00	$41.57	$17.05	$13.35	$3.25	$0.00	$75.22
5	75.00	$44.54	$17.05	$13.35	$3.25	$0.00	$78.19
6	80.00	$47.50	$17.05	$13.35	$3.25	$0.00	$81.15
7	85.00	$50.47	$17.05	$13.35	$3.25	$0.00	$84.12
8	90.00	$53.44	$17.05	$13.35	$3.25	$0.00	$87.09

Apprentice: HOISTING ENGINEER/CRANES/GRADALLS

Effective Date: 12/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	$33.46	$0.00	$0.00	$0.00	$0.00	$33.46
2	60.00	$36.50	$17.05	$13.35	$3.25	$0.00	$70.15
3	65.00	$39.54	$17.05	$13.35	$3.25	$0.00	$73.19
4	70.00	$42.58	$17.05	$13.35	$3.25	$0.00	$76.23
5	75.00	$45.62	$17.05	$13.35	$3.25	$0.00	$79.27
6	80.00	$48.66	$17.05	$13.35	$3.25	$0.00	$82.31
7	85.00	$51.71	$17.05	$13.35	$3.25	$0.00	$85.36
8	90.00	$54.75	$17.05	$13.35	$3.25	$0.00	$88.40

Apprentice to Journeyworker Ratio: 1:6

HVAC (DUCTWORK) SHEETMETAL WORKERS LOCAL 63 SHEETMETAL WORKERS LOCAL 63	7/1/2026	$43.48	$13.24	$11.01	$9.92	$2.13	$79.78
	1/1/2027	$43.48	$13.54	$11.01	$11.12	$2.13	$81.28
	7/1/2027	$44.98	$13.54	$11.01	$11.12	$2.13	$82.78
	1/1/2028	$46.48	$13.54	$11.01	$11.12	$2.13	$84.28
For apprentice rates see "Apprentice- SHEET METAL WORKER"							
HVAC (ELECTRICAL CONTROLS) ELECTRICIANS LOCAL 96 ELECTRICIANS LOCAL 96	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) SHEETMETAL WORKERS LOCAL 63 SHEETMETAL WORKERS LOCAL 63	7/1/2026	$43.48	$13.24	$11.01	$9.92	$2.13	$79.78
	1/1/2027	$43.48	$13.54	$11.01	$11.12	$2.13	$81.28
	7/1/2027	$44.98	$13.54	$11.01	$11.12	$2.13	$82.78
	1/1/2028	$46.48	$13.54	$11.01	$11.12	$2.13	$84.28
For apprentice rates see "Apprentice- SHEET METAL WORKER"							
HVAC (TESTING AND BALANCING -WATER) PLUMBERS LOCAL 4 PLUMBERS LOCAL 4	3/1/2026	$55.90	$13.10	$9.71	$8.06	$0.00	$86.77

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"							
HVAC MECHANIC PLUMBERS LOCAL 4 PLUMBERS LOCAL 4	3/1/2026	$55.90	$13.10	$9.71	$8.06	$0.00	$86.77
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"							
HYDRAULIC DRILLS LABORERS LABORERS - ZONE 2	6/1/2026	$42.41	$10.90	$9.75	$9.11	$0.00	$72.17
	12/1/2026	$43.85	$10.90	$9.75	$9.11	$0.00	$73.61
	6/1/2027	$45.30	$10.90	$9.75	$9.11	$0.00	$75.06
	12/1/2027	$46.75	$10.90	$9.75	$9.11	$0.00	$76.51
	6/1/2028	$48.25	$10.90	$9.75	$9.11	$0.00	$78.01
	12/1/2028	$49.75	$10.90	$9.75	$9.11	$0.00	$79.51
For apprentice rates see "Apprentice- LABORER"							
HYDRAULIC DRILLS (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	$42.41	$10.90	$9.75	$9.21	$0.00	$72.27
	12/1/2026	$43.85	$10.90	$9.75	$9.21	$0.00	$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
INSULATOR (PIPES & TANKS) HEAT & FROST INSULATORS LOCAL 6 HEAT & FROST INSULATORS LOCAL 6 (WORCESTER)	9/1/2026	$53.12	$16.15	$11.46	$11.49	$0.00	$92.22

Apprentice: INSULATOR (PIPES & TANKS)

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$26.56	$16.15	$11.21	$5.75	$0.00	$59.67
2	60.00	$31.87	$16.15	$11.26	$6.89	$0.00	$66.17
3	70.00	$37.18	$16.15	$11.31	$8.04	$0.00	$72.68
4	80.00	$42.50	$16.15	$11.36	$9.19	$0.00	$79.20

Apprentice to Journeyworker Ratio: 1:4

IRONWORKER/WELDER IRONWORKERS LOCAL 7 IRONWORKERS LOCAL 7 (WORCESTER AREA)	3/16/2026	$58.35	$9.25	$12.75	$15.00	$0.00	$95.35

Apprentice: IRONWORKER/WELDER

Effective Date: 3/16/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	70.00	$40.85	$9.25	$12.75	$5.00	$0.00	$67.85
2	80.00	$46.68	$9.25	$12.75	$5.00	$0.00	$73.68
3	90.00	$52.52	$9.25	$12.75	$5.00	$0.00	$79.52
4	0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
5	0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
6	0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice to Journeyworker Ratio: 1:4							
JACKHAMMER & PAVING BREAKER OPERATOR LABORERS LABORERS - ZONE 2	6/1/2026	$41.91	$10.90	$9.75	$9.11	$0.00	$71.67
	12/1/2026	$43.35	$10.90	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$44.80	$10.90	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.25	$10.90	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$47.75	$10.90	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.25	$10.90	$9.75	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
LABORER LABORERS LABORERS - ZONE 2	6/1/2026	$41.66	$10.90	$9.75	$9.11	$0.00	$71.42
	12/1/2026	$43.10	$10.90	$9.75	$9.11	$0.00	$72.86
	6/1/2027	$44.55	$10.90	$9.75	$9.11	$0.00	$74.31
	12/1/2027	$46.00	$10.90	$9.75	$9.11	$0.00	$75.76
	6/1/2028	$47.50	$10.90	$9.75	$9.11	$0.00	$77.26
	12/1/2028	$49.00	$10.90	$9.75	$9.11	$0.00	$78.76

Apprentice: LABORER

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$25.00	$10.90	$9.75	$9.11	$0.00	$54.76
2	70.00	$29.16	$10.90	$9.75	$9.11	$0.00	$58.92
3	80.00	$33.33	$10.90	$9.75	$9.11	$0.00	$63.09
4	90.00	$37.49	$10.90	$9.75	$9.11	$0.00	$67.25

Apprentice: LABORER

Effective Date: 12/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$25.86	$10.90	$9.75	$9.11	$0.00	$55.62
2	70.00	$30.17	$10.90	$9.75	$9.11	$0.00	$59.93
3	80.00	$34.48	$10.90	$9.75	$9.11	$0.00	$64.24
4	90.00	$38.79	$10.90	$9.75	$9.11	$0.00	$68.55

Apprentice to Journeyworker Ratio: 1:5

LABORER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	$41.66	$10.90	$9.75	$9.21	$0.00	$71.52
	12/1/2026	$43.10	$10.90	$9.75	$9.21	$0.00	$72.96

Apprentice: LABORER (HEAVY & HIGHWAY)

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$25.00	$10.90	$9.75	$9.21	$0.00	$54.86

Construction

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

Apprentice: LABORER (HEAVY & HIGHWAY)

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
2	70.00	$29.16	$10.90	$9.75	$9.21	$0.00	$59.02
3	80.00	$33.33	$10.90	$9.75	$9.21	$0.00	$63.19
4	90.00	$37.49	$10.90	$9.75	$9.10	$0.00	$67.24

Apprentice: LABORER (HEAVY & HIGHWAY)

Effective Date: 12/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$25.86	$10.90	$9.75	$9.21	$0.00	$55.72
2	70.00	$30.17	$10.90	$9.75	$9.21	$0.00	$60.03
3	80.00	$34.48	$10.90	$9.75	$9.21	$0.00	$64.34
4	90.00	$38.79	$10.90	$9.75	$9.21	$0.00	$68.65

Apprentice to Journeyworker Ratio: 1:5

LABORER: CARPENTER TENDER LABORERS LABORERS - ZONE 2	6/1/2026	$41.66	$10.90	$9.75	$9.11	$0.00	$71.42
	12/1/2026	$43.10	$10.90	$9.75	$9.11	$0.00	$72.86
	6/1/2027	$44.55	$10.90	$9.75	$9.11	$0.00	$74.31
	12/1/2027	$46.00	$10.90	$9.75	$9.11	$0.00	$75.76
	6/1/2028	$47.50	$10.90	$9.75	$9.11	$0.00	$77.26
	12/1/2028	$49.00	$10.90	$9.75	$9.11	$0.00	$78.76
For apprentice rates see "Apprentice- LABORER"							
LABORER: CEMENT FINISHER TENDER LABORERS LABORERS - ZONE 2	6/1/2026	$41.66	$10.90	$9.75	$9.11	$0.00	$71.42
	12/1/2026	$43.10	$10.90	$9.75	$9.11	$0.00	$72.86
	6/1/2027	$44.55	$10.90	$9.75	$9.11	$0.00	$74.31
	12/1/2027	$46.00	$10.90	$9.75	$9.11	$0.00	$75.76
	6/1/2028	$47.50	$10.90	$9.75	$9.11	$0.00	$77.26
	12/1/2028	$49.00	$10.90	$9.75	$9.11	$0.00	$78.76
For apprentice rates see "Apprentice- LABORER"							
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER LABORERS LABORERS - ZONE 2	6/1/2026	$41.75	$10.90	$9.75	$9.65	$0.00	$72.05
	12/7/2026	$43.19	$10.90	$9.75	$9.65	$0.00	$73.49
	6/7/2027	$44.64	$10.90	$9.75	$9.65	$0.00	$74.94
	12/6/2027	$46.09	$10.90	$9.75	$9.65	$0.00	$76.39
	6/5/2028	$47.59	$10.90	$9.75	$9.65	$0.00	$77.89
	12/4/2028	$49.09	$10.90	$9.75	$9.65	$0.00	$79.39
For apprentice rates see "Apprentice- LABORER"							
LABORER: MASON TENDER LABORERS LABORERS - ZONE 2	6/1/2026	$41.91	$10.90	$9.75	$9.11	$0.00	$71.67
	12/1/2026	$43.35	$10.90	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$44.80	$10.90	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.25	$10.90	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$47.75	$10.90	$9.75	$9.11	$0.00	$77.51

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	12/1/2028	$49.25	$10.90	$9.75	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
LABORER: MASON TENDER (HEAVY & HIGHWAY)	6/1/2026	$41.91	$10.90	$9.75	$9.21	$0.00	$71.77
LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2026	$43.35	$10.90	$9.75	$9.21	$0.00	$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
LABORER: MULTI-TRADE TENDER	6/1/2026	$41.66	$10.90	$9.75	$9.11	$0.00	$71.42
LABORERS LABORERS - ZONE 2	12/1/2026	$43.10	$10.90	$9.75	$9.11	$0.00	$72.86
	6/1/2027	$44.55	$10.90	$9.75	$9.11	$0.00	$74.31
	12/1/2027	$46.00	$10.90	$9.75	$9.11	$0.00	$75.76
	6/1/2028	$47.50	$10.90	$9.75	$9.11	$0.00	$77.26
	12/1/2028	$49.00	$10.90	$9.75	$9.11	$0.00	$78.76
For apprentice rates see "Apprentice- LABORER"							
LABORER: TREE REMOVER	6/1/2026	$41.66	$10.90	$9.75	$9.11	$0.00	$71.42
LABORERS LABORERS - ZONE 2	12/1/2026	$43.10	$10.90	$9.75	$9.11	$0.00	$72.86
	6/1/2027	$44.55	$10.90	$9.75	$9.11	$0.00	$74.31
	12/1/2027	$46.00	$10.90	$9.75	$9.11	$0.00	$75.76
	6/1/2028	$47.50	$10.90	$9.75	$9.11	$0.00	$77.26
	12/1/2028	$49.00	$10.90	$9.75	$9.11	$0.00	$78.76
This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction . For apprentice rates see "Apprentice- LABORER"							
LASER BEAM OPERATOR	6/1/2026	$41.91	$10.90	$9.75	$9.11	$0.00	$71.67
LABORERS LABORERS - ZONE 2	12/1/2026	$43.35	$10.90	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$44.80	$10.90	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.25	$10.90	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$47.75	$10.90	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.25	$10.90	$9.75	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
LASER BEAM OPERATOR (HEAVY & HIGHWAY)	6/1/2026	$41.91	$10.90	$9.75	$9.21	$0.00	$71.77
LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2026	$43.35	$10.90	$9.75	$9.21	$0.00	$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
MARBLE & TILE FINISHERS	8/1/2026	$53.84	$12.84	$15.57	$5.78	$0.00	$88.03
BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 - MARBLE & TILE	2/1/2027	$54.96	$12.84	$15.57	$5.78	$0.00	$89.15

Apprentice: MARBLE & TILE FINISHERS

Effective Date: 8/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$26.92	$12.84	$15.57	$5.78	$0.00	$61.11
2	60.00	$32.30	$12.84	$15.57	$5.78	$0.00	$66.49
3	70.00	$37.69	$12.84	$15.57	$5.78	$0.00	$71.88
4	80.00	$43.07	$12.84	$15.57	$5.78	$0.00	$77.26

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

Apprentice: MARBLE & TILE FINISHERS

Effective Date: 8/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
5	90.00	$48.46	$12.84	$15.57	$5.78	$0.00	$82.65

Apprentice: MARBLE & TILE FINISHERS

Effective Date: 2/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$27.48	$12.84	$15.57	$5.78	$0.00	$61.67
2	60.00	$32.98	$12.84	$15.57	$5.78	$0.00	$67.17
3	70.00	$38.47	$12.84	$15.57	$5.78	$0.00	$72.66
4	80.00	$43.97	$12.84	$15.57	$5.78	$0.00	$78.16
5	90.00	$49.46	$12.84	$15.57	$5.78	$0.00	$83.65

Apprentice to Journeyworker Ratio: 1:5

MARBLE MASONS,TILELAYERS & TERRAZZO MECH BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 - MARBLE & TILE	8/1/2026	$70.17	$12.84	$15.57	$7.99	$0.00	$106.57
	2/1/2027	$71.57	$12.84	$15.57	$7.99	$0.00	$107.97

Apprentice: MARBLE MASONS,TILELAYERS & TERRAZZO MECH

Effective Date: 8/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$35.09	$12.84	$15.57	$7.99	$0.00	$71.49
2	60.00	$42.10	$12.84	$15.57	$7.99	$0.00	$78.50
3	70.00	$49.12	$12.84	$15.57	$7.99	$0.00	$85.52
4	80.00	$56.14	$12.84	$15.57	$7.99	$0.00	$92.54
5	90.00	$63.15	$12.84	$15.57	$7.99	$0.00	$99.55

Apprentice: MARBLE MASONS,TILELAYERS & TERRAZZO MECH

Effective Date: 2/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$35.79	$12.84	$15.57	$7.99	$0.00	$72.19
2	60.00	$42.94	$12.84	$15.57	$7.99	$0.00	$79.34
3	70.00	$50.10	$12.84	$15.57	$7.99	$0.00	$86.50
4	80.00	$57.26	$12.84	$15.57	$7.99	$0.00	$93.66
5	90.00	$64.41	$12.84	$15.57	$7.99	$0.00	$100.81

Apprentice to Journeyworker Ratio: 1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES) OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$58.70	$17.05	$13.35	$3.25	$0.00	$92.35
	12/1/2026	$60.14	$17.05	$13.35	$3.25	$0.00	$93.79

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
MECHANICS MAINTENANCE OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$58.70	$17.05	$13.35	$3.25	$0.00	$92.35
	12/1/2026	$60.14	$17.05	$13.35	$3.25	$0.00	$93.79
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
MILLWRIGHT (Zone 3) MILLWRIGHTS LOCAL 1121 MILLWRIGHTS LOCAL 1121 - Zone 3	1/5/2026	$45.20	$10.58	$11.47	$9.75	$0.00	$77.00

Apprentice: MILLWRIGHT (Zone 3)

Effective Date: 1/5/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	$24.86	$10.58	$0.00	$5.36	$0.00	$40.80
2	65.00	$29.38	$10.58	$0.00	$6.34	$0.00	$46.30
3	75.00	$33.90	$10.58	$11.47	$7.31	$0.00	$63.26
4	85.00	$38.42	$10.58	$11.47	$8.29	$0.00	$68.76

Apprentice Notes

Step 1&2 Appr. indentured after 1/6/2020 receive no pension,

Apprentice to Journeyworker Ratio: 1:4

MORTAR MIXER LABORERS LABORERS - ZONE 2	6/1/2026	$41.91	$10.90	$9.75	$9.11	$0.00	$71.67
	12/1/2026	$43.35	$10.90	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$44.80	$10.90	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.25	$10.90	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$47.75	$10.90	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.25	$10.90	$9.75	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
OILER (OTHER THAN TRUCK CRANES,GRADALLS) OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$25.07	$17.05	$13.35	$3.25	$0.00	$58.72
	12/1/2026	$25.74	$17.05	$13.35	$3.25	$0.00	$59.39
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
OILER (TRUCK CRANES, GRADALLS) OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$31.17	$17.05	$13.35	$3.25	$0.00	$64.82
	12/1/2026	$31.97	$17.05	$13.35	$3.25	$0.00	$65.62
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
OTHER POWER DRIVEN EQUIPMENT - CLASS II OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$58.70	$17.05	$13.35	$3.25	$0.00	$92.35
	12/1/2026	$60.14	$17.05	$13.35	$3.25	$0.00	$93.79
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
PAINTER (BRIDGES/TANKS) PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 2	1/1/2026	$59.56	$10.35	$12.00	$12.50	$0.00	$94.41

Construction

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

Apprentice: PAINTER (BRIDGES/TANKS)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$29.78	$10.35	$0.00	$0.00	$0.00	$40.13
2	55.00	$32.76	$10.35	$0.00	$6.93	$0.00	$50.04
3	60.00	$35.74	$10.35	$0.00	$7.56	$0.00	$53.65
4	65.00	$38.71	$10.35	$0.00	$8.19	$0.00	$57.25
5	70.00	$41.69	$10.35	$12.00	$8.82	$0.00	$72.86
6	75.00	$44.67	$10.35	$12.00	$9.45	$0.00	$76.47
7	80.00	$47.65	$10.35	$12.00	$10.08	$0.00	$80.08
8	90.00	$53.60	$10.35	$12.00	$11.34	$0.00	$87.29

Apprentice to Journeyworker Ratio: 1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	1/1/2026	$50.46	$10.35	$12.00	$12.60	$0.00	$85.41

* If 30% or more of surfaces to be painted are new construction,
NEW paint rate shall be used.
PAINTERS LOCAL 35
PAINTERS LOCAL 35 - ZONE 2

Apprentice: PAINTER (SPRAY OR SANDBLAST, NEW) *

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$25.23	$10.35	$0.00	$0.00	$0.00	$35.58
2	55.00	$27.75	$10.35	$0.00	$6.93	$0.00	$45.03
3	60.00	$30.28	$10.35	$0.00	$7.56	$0.00	$48.19
4	65.00	$32.80	$10.35	$0.00	$8.19	$0.00	$51.34
5	70.00	$35.32	$10.35	$12.00	$8.82	$0.00	$66.49
6	75.00	$37.85	$10.35	$12.00	$9.45	$0.00	$69.65
7	80.00	$40.37	$10.35	$12.00	$10.08	$0.00	$72.80
8	90.00	$45.41	$10.35	$12.00	$11.34	$0.00	$79.10

Apprentice to Journeyworker Ratio: 1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT)	1/1/2026	$48.52	$10.35	$12.00	$12.60	$0.00	$83.47

PAINTERS LOCAL 35
PAINTERS LOCAL 35 - ZONE 2

Apprentice: PAINTER (SPRAY OR SANDBLAST, REPAINT)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.26	$10.35	$0.00	$0.00	$0.00	$34.61
2	55.00	$26.69	$10.35	$0.00	$6.93	$0.00	$43.97
3	60.00	$29.11	$10.35	$0.00	$7.56	$0.00	$47.02

Construction

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

Apprentice: PAINTER (SPRAY OR SANDBLAST, REPAINT)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
4	65.00	$31.54	$10.35	$0.00	$8.19	$0.00	$50.08
5	70.00	$33.96	$10.35	$12.00	$8.82	$0.00	$65.13
6	75.00	$36.39	$10.35	$12.00	$9.45	$0.00	$68.19
7	80.00	$38.82	$10.35	$12.00	$10.08	$0.00	$71.25
8	90.00	$43.67	$10.35	$12.00	$11.34	$0.00	$77.36

Apprentice to Journeyworker Ratio: 1:1

PAINTER / TAPER (BRUSH, NEW) *	1/1/2026	$49.06	$10.35	$12.00	$12.60	$0.00	$84.01

* If 30% or more of surfaces to be painted are new construction,
NEW paint rate shall be used.
PAINTERS LOCAL 35
PAINTERS LOCAL 35 - ZONE 2

Apprentice: PAINTER / TAPER (BRUSH, NEW) *

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.53	$10.35	$0.00	$0.00	$0.00	$34.88
2	55.00	$26.98	$10.35	$0.00	$6.93	$0.00	$44.26
3	60.00	$29.44	$10.35	$0.00	$7.56	$0.00	$47.35
4	65.00	$31.89	$10.35	$0.00	$8.19	$0.00	$50.43
5	70.00	$34.34	$10.35	$12.00	$8.82	$0.00	$65.51
6	75.00	$36.80	$10.35	$12.00	$9.45	$0.00	$68.60
7	80.00	$39.25	$10.35	$12.00	$10.08	$0.00	$71.68
8	90.00	$44.15	$10.35	$12.00	$11.34	$0.00	$77.84

Apprentice to Journeyworker Ratio: 1:1

PAINTER / TAPER (BRUSH, REPAINT)	1/1/2026	$47.12	$10.35	$12.00	$12.60	$0.00	$82.07

PAINTERS LOCAL 35
PAINTERS LOCAL 35 - ZONE 2

Apprentice: PAINTER / TAPER (BRUSH, REPAINT)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$23.56	$10.35	$0.00	$0.00	$0.00	$33.91
2	55.00	$25.92	$10.35	$0.00	$6.93	$0.00	$43.20
3	60.00	$28.27	$10.35	$0.00	$7.56	$0.00	$46.18
4	65.00	$30.63	$10.35	$0.00	$8.19	$0.00	$49.17
5	70.00	$32.98	$10.35	$12.00	$8.82	$0.00	$64.15
6	75.00	$35.34	$10.35	$12.00	$9.45	$0.00	$67.14
7	80.00	$37.70	$10.35	$12.00	$10.08	$0.00	$70.13

Construction

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

Apprentice: PAINTER / TAPER (BRUSH, REPAINT)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
8	90.00	$42.41	$10.35	$12.00	$11.34	$0.00	$76.10

Apprentice to Journeyworker Ratio: 1:1

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	$41.66	$10.90	$9.75	$9.21	$0.00	$71.52
	12/1/2026	$43.10	$10.90	$9.75	$9.21	$0.00	$72.96

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

PANEL & PICKUP TRUCKS DRIVER TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	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 (UNDERPINNING AND DECK) 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 DRIVER"

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

Apprentice: PILE DRIVER

Effective Date: 8/1/2024

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$23.39	$10.08	$0.00	$2.53	$0.00	$36.00
2	55.00	$28.58	$10.08	$0.00	$5.07	$0.00	$43.73
3	70.00	$36.38	$10.08	$11.62	$7.60	$0.00	$65.68
4	80.00	$41.58	$10.08	$11.62	$10.14	$0.00	$73.42

Apprentice to Journeyworker Ratio: 1:5

PIPELAYER LABORERS LABORERS - ZONE 2	6/1/2026	$41.91	$10.90	$9.75	$9.11	$0.00	$71.67
	12/1/2026	$43.35	$10.90	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$44.80	$10.90	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.25	$10.90	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$47.75	$10.90	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.25	$10.90	$9.75	$9.11	$0.00	$79.01

For apprentice rates see "Apprentice- LABORER"

PIPELAYER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	$41.91	$10.90	$9.75	$9.21	$0.00	$71.77
	12/1/2026	$43.35	$10.90	$9.75	$9.21	$0.00	$73.21

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

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
PLUMBER & PIPEFITTER PLUMBERS LOCAL 4 PLUMBERS LOCAL 4	3/1/2026	$55.90	$13.10	$9.71	$8.06	$0.00	$86.77

Apprentice: PLUMBER & PIPEFITTER

Effective Date: 3/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$22.36	$13.10	$0.00	$0.00	$0.00	$35.46
2	50.00	$27.95	$13.10	$0.00	$0.00	$0.00	$41.05
3	60.00	$33.54	$13.10	$0.00	$0.00	$0.00	$46.64
4	70.00	$39.13	$13.10	$0.00	$8.06	$0.00	$60.29
5	80.00	$44.72	$13.10	$0.00	$8.06	$0.00	$65.88

Apprentice to Journeyworker Ratio: 1:3

PNEUMATIC CONTROLS (TEMP.) PLUMBERS LOCAL 4 PLUMBERS LOCAL 4	3/1/2026	$55.90	$13.10	$9.71	$8.06	$0.00	$86.77

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

PNEUMATIC DRILL/TOOL OPERATOR LABORERS LABORERS - ZONE 2	6/1/2026	$41.91	$10.90	$9.75	$9.11	$0.00	$71.67
	12/1/2026	$43.35	$10.90	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$44.80	$10.90	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.25	$10.90	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$47.75	$10.90	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.25	$10.90	$9.75	$9.11	$0.00	$79.01

For apprentice rates see "Apprentice- LABORER"

PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	$41.91	$10.90	$9.75	$9.21	$0.00	$71.77
	12/1/2026	$43.35	$10.90	$9.75	$9.21	$0.00	$73.21

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

POWDERMAN & BLASTER LABORERS LABORERS - ZONE 2	6/1/2026	$42.66	$10.90	$9.75	$9.11	$0.00	$72.42
	12/1/2026	$44.10	$10.90	$9.75	$9.11	$0.00	$73.86
	6/1/2027	$45.55	$10.90	$9.75	$9.11	$0.00	$75.31
	12/1/2027	$47.00	$10.90	$9.75	$9.11	$0.00	$76.76
	6/1/2028	$48.50	$10.90	$9.75	$9.11	$0.00	$78.26
	12/1/2028	$50.00	$10.90	$9.75	$9.11	$0.00	$79.76

For apprentice rates see "Apprentice- LABORER"

POWDERMAN & BLASTER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	$42.66	$10.90	$9.75	$9.21	$0.00	$72.52
	12/1/2026	$44.10	$10.90	$9.75	$9.21	$0.00	$73.96

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

POWER SHOVEL/DERRICK/TRENCHING MACHINE OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$59.38	$17.05	$13.35	$3.25	$0.00	$93.03
	12/1/2026	$60.83	$17.05	$13.35	$3.25	$0.00	$94.48

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
PUMP OPERATOR (CONCRETE)	6/1/2026	$58.70	$17.05	$13.35	$3.25	$0.00	$92.35
OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2026	$60.14	$17.05	$13.35	$3.25	$0.00	$93.79
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
PUMP OPERATOR (DEWATERING, OTHER)	6/1/2026	$37.63	$17.05	$13.35	$3.25	$0.00	$71.28
OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2026	$38.58	$17.05	$13.35	$3.25	$0.00	$72.23
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
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	6/1/2026	$58.70	$17.05	$13.35	$3.25	$0.00	$92.35
OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2026	$60.14	$17.05	$13.35	$3.25	$0.00	$93.79
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
RIDE-ON MOTORIZED BUGGY OPERATOR	6/1/2026	$41.91	$10.90	$9.75	$9.11	$0.00	$71.67
LABORERS LABORERS - ZONE 2	12/1/2026	$43.35	$10.90	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$44.80	$10.90	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.25	$10.90	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$47.75	$10.90	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.25	$10.90	$9.75	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
ROLLER/SPREADER/MULCHING MACHINE	6/1/2026	$58.70	$17.05	$13.35	$3.25	$0.00	$92.35
OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2026	$60.14	$17.05	$13.35	$3.25	$0.00	$93.79
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg)	8/1/2026	$55.25	$14.53	$12.67	$9.03	$0.00	$91.48
ROOFERS LOCAL 33 ROOFERS LOCAL 33	2/1/2027	$57.00	$14.53	$12.67	$9.03	$0.00	$93.23
	8/1/2027	$58.75	$14.53	$12.67	$9.03	$0.00	$94.98
	2/1/2028	$60.50	$14.53	$12.67	$9.03	$0.00	$96.73
	8/1/2028	$62.25	$14.53	$12.67	$9.03	$0.00	$98.48
	2/1/2029	$64.00	$14.53	$12.67	$9.03	$0.00	$100.23
	8/1/2029	$65.65	$14.53	$12.67	$9.03	$0.00	$101.88
	2/1/2030	$67.40	$14.53	$12.67	$9.03	$0.00	$103.63

Apprentice: ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg)

Effective Date: 8/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	0.00	$0.00	$14.53	$6.34	$0.00	$0.00	$20.87
2	0.00	$0.00	$14.53	$12.67	$9.03	$0.00	$36.23
3	0.00	$0.00	$14.53	$12.67	$9.03	$0.00	$36.23
4	0.00	$0.00	$14.53	$12.67	$9.03	$0.00	$36.23
5	0.00	$0.00	$14.53	$12.67	$9.03	$0.00	$36.23

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
ROOFER SLATE / TILE / PRECAST CONCRETE ROOFERS LOCAL 33 ROOFERS LOCAL 33	8/1/2026	$55.50	$14.53	$12.67	$9.03	$0.00	$91.73
	2/1/2027	$57.25	$14.53	$12.67	$9.03	$0.00	$93.48
	8/1/2027	$59.00	$14.53	$12.67	$9.03	$0.00	$95.23
	2/1/2028	$60.75	$14.53	$12.67	$9.03	$0.00	$96.98
	8/1/2028	$62.50	$14.53	$12.67	$9.03	$0.00	$98.73
	2/1/2029	$64.25	$14.53	$12.67	$9.03	$0.00	$100.48
	8/1/2029	$65.90	$14.53	$12.67	$9.03	$0.00	$102.13
	2/1/2030	$67.65	$14.53	$12.67	$9.03	$0.00	$103.88
For apprentice rates see "Apprentice- ROOFER"							
SHEETMETAL WORKER SHEETMETAL WORKERS LOCAL 63 SHEETMETAL WORKERS LOCAL 63	7/1/2026	$43.48	$13.24	$11.01	$9.92	$2.13	$79.78
	1/1/2027	$43.48	$13.54	$11.01	$11.12	$2.13	$81.28
	7/1/2027	$44.98	$13.54	$11.01	$11.12	$2.13	$82.78
	1/1/2028	$46.48	$13.54	$11.01	$11.12	$2.13	$84.28

Apprentice: ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg)

Effective Date: 2/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	0.00	$0.00	$14.53	$6.34	$0.00	$0.00	$20.87
2	0.00	$0.00	$14.53	$12.67	$9.03	$0.00	$36.23
3	0.00	$0.00	$14.53	$12.67	$9.03	$0.00	$36.23
4	0.00	$0.00	$14.53	$12.67	$9.03	$0.00	$36.23
5	0.00	$0.00	$14.53	$12.67	$9.03	$0.00	$36.23

Apprentice Notes

** 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1

Apprentice to Journeyworker Ratio: 1:5

Apprentice: SHEETMETAL WORKER

Effective Date: 7/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$19.57	$5.96	$4.95	$0.00	$0.85	$31.33
2	50.00	$21.74	$6.62	$5.51	$0.00	$0.94	$34.81
3	55.00	$23.91	$7.28	$9.91	$0.00	$1.15	$42.25
4	60.00	$26.09	$7.94	$9.91	$0.00	$1.23	$45.17
5	65.00	$28.26	$8.60	$9.91	$0.00	$1.31	$48.08
6	70.00	$30.44	$9.27	$9.91	$0.00	$1.39	$51.01
7	75.00	$32.61	$9.93	$9.91	$0.00	$1.47	$53.92
8	80.00	$34.78	$10.59	$9.91	$9.92	$1.78	$66.98
9	85.00	$36.96	$11.25	$9.91	$9.92	$1.86	$69.90
10	90.00	$39.13	$11.92	$9.91	$9.92	$1.94	$72.82

Construction

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

Apprentice: SHEETMETAL WORKER

Effective Date: 1/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$19.57	$6.09	$4.95	$0.00	$0.85	$31.46
2	50.00	$21.74	$6.77	$5.51	$0.00	$0.94	$34.96
3	55.00	$23.91	$7.45	$9.91	$0.00	$1.15	$42.42
4	60.00	$26.09	$8.36	$9.91	$0.00	$1.23	$45.59
5	65.00	$28.26	$8.86	$9.91	$0.00	$1.31	$48.34
6	70.00	$30.44	$9.48	$9.91	$0.00	$1.39	$51.22
7	75.00	$32.61	$10.15	$9.91	$0.00	$1.47	$54.14
8	80.00	$34.78	$10.83	$9.91	$11.12	$1.78	$68.42
9	85.00	$36.96	$11.51	$9.91	$11.12	$1.86	$71.36
10	90.00	$39.13	$12.18	$9.91	$11.12	$1.94	$74.28

Apprentice to Journeyworker Ratio: 1:3

SPECIALIZED EARTH MOVING EQUIP < 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	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 TONS TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	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 SPRINKLER FITTERS LOCAL 669	10/1/2026	$56.54	$13.60	$7.45	$9.41	$0.00	$87.00
	1/1/2027	$56.54	$14.55	$7.50	$9.41	$0.00	$88.00
	4/1/2027	$59.83	$14.55	$7.50	$9.41	$0.00	$91.29
	7/1/2027	$59.83	$14.55	$7.50	$9.41	$0.00	$91.29
	10/1/2027	$59.83	$14.55	$7.50	$9.41	$0.00	$91.29
	1/1/2028	$59.83	$15.50	$7.55	$9.41	$0.00	$92.29

Apprentice: SPRINKLER FITTER

Effective Date: 10/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	43.00	$28.36	$0.00	$0.00	$0.00	$0.00	$28.36
2	48.00	$31.66	$0.00	$0.00	$0.00	$0.00	$31.66
3	52.00	$34.29	$0.00	$0.00	$1.15	$0.00	$35.44
4	56.00	$36.93	$0.00	$0.00	$1.15	$0.00	$38.08
5	59.00	$38.91	$0.00	$0.00	$1.40	$0.00	$40.31
6	64.00	$42.21	$0.00	$0.00	$1.40	$0.00	$43.61
7	68.00	$44.85	$0.00	$0.00	$1.40	$0.00	$46.25
8	72.00	$47.48	$0.00	$0.00	$1.40	$0.00	$48.88
9	76.00	$50.12	$0.00	$0.00	$1.40	$0.00	$51.52
10	80.00	$52.76	$0.00	$0.00	$1.40	$0.00	$54.16

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

Apprentice: SPRINKLER FITTER

Effective Date: 1/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	43.00	$28.36	$0.00	$0.00	$0.00	$0.00	$28.36
2	48.00	$31.66	$0.00	$0.00	$0.00	$0.00	$31.66
3	52.00	$34.29	$0.00	$0.00	$1.15	$0.00	$35.44
4	56.00	$36.93	$0.00	$0.00	$1.15	$0.00	$38.08
5	59.00	$38.91	$0.00	$0.00	$1.40	$0.00	$40.31
6	64.00	$42.21	$0.00	$0.00	$1.40	$0.00	$43.61
7	68.00	$44.85	$0.00	$0.00	$1.40	$0.00	$46.25
8	72.00	$47.48	$0.00	$0.00	$1.40	$0.00	$48.88
9	76.00	$50.12	$0.00	$0.00	$1.40	$0.00	$51.52
10	80.00	$52.76	$0.00	$0.00	$1.40	$0.00	$54.16

Apprentice to Journeyworker Ratio: 1:1

STEAM BOILER OPERATOR OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$58.70	$17.05	$13.35	$3.25	$0.00	$92.35
	12/1/2026	$60.14	$17.05	$13.35	$3.25	$0.00	$93.79

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$58.70	$17.05	$13.35	$3.25	$0.00	$92.35
	12/1/2026	$60.14	$17.05	$13.35	$3.25	$0.00	$93.79

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

TERRAZZO FINISHERS BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 - MARBLE & TILE	8/1/2026	$69.09	$12.84	$15.57	$8.02	$0.00	$105.52
	2/1/2027	$70.49	$12.84	$15.57	$8.02	$0.00	$106.92

Apprentice: TERRAZZO FINISHERS

Effective Date: 8/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$34.55	$12.84	$15.57	$8.02	$0.00	$70.98
2	60.00	$41.45	$12.84	$15.57	$8.02	$0.00	$77.88
3	70.00	$48.36	$12.84	$15.57	$8.02	$0.00	$84.79
4	80.00	$55.27	$12.84	$15.57	$8.02	$0.00	$91.70
5	90.00	$62.18	$12.84	$15.57	$8.02	$0.00	$98.61

Apprentice: TERRAZZO FINISHERS

Effective Date: 2/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$35.25	$12.84	$15.57	$8.02	$0.00	$71.68
2	60.00	$42.29	$12.84	$15.57	$8.02	$0.00	$78.72

Construction

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

Apprentice: TERRAZZO FINISHERS

Effective Date: 2/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
3	70.00	$49.34	$12.84	$15.57	$8.02	$0.00	$85.77
4	80.00	$56.39	$12.84	$15.57	$8.02	$0.00	$92.82
5	90.00	$63.44	$12.84	$15.57	$8.02	$0.00	$99.87

Apprentice to Journeyworker Ratio: 1:5

TEST BORING DRILLER LABORERS LABORERS - FOUNDATION AND MARINE	6/1/2026	$53.25	$10.90	$9.75	$9.80	$0.00	$83.70
	12/1/2026	$54.75	$10.90	$9.75	$9.80	$0.00	$85.20
For apprentice rates see "Apprentice- LABORER"							
TEST BORING DRILLER HELPER LABORERS LABORERS - FOUNDATION AND MARINE	6/1/2026	$49.37	$10.90	$9.75	$9.80	$0.00	$79.82
	12/1/2026	$50.87	$10.90	$9.75	$9.80	$0.00	$81.32
For apprentice rates see "Apprentice- LABORER"							
TEST BORING LABORER LABORERS LABORERS - FOUNDATION AND MARINE	6/1/2026	$49.25	$10.90	$9.75	$9.80	$0.00	$79.70
	12/1/2026	$50.75	$10.90	$9.75	$9.80	$0.00	$81.20
For apprentice rates see "Apprentice- LABORER"							
TRACTORS/PORTABLE STEAM GENERATORS OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$58.70	$17.05	$13.35	$3.25	$0.00	$92.35
	12/1/2026	$60.14	$17.05	$13.35	$3.25	$0.00	$93.79
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
TRAILERS FOR EARTH MOVING EQUIPMENT TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	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 LABORERS LABORERS (COMPRESSED AIR)	6/1/2026	$61.48	$10.90	$9.75	$10.25	$0.00	$92.38
	12/1/2026	$62.98	$10.90	$9.75	$10.25	$0.00	$93.88
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) LABORERS LABORERS (COMPRESSED AIR)	6/1/2026	$63.48	$10.90	$9.75	$10.25	$0.00	$94.38
	12/1/2026	$64.98	$10.90	$9.75	$10.25	$0.00	$95.88
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - FREE AIR LABORERS LABORERS (FREE AIR TUNNEL)	6/1/2026	$53.55	$10.90	$9.75	$10.25	$0.00	$84.45
	12/1/2026	$55.05	$10.90	$9.75	$10.25	$0.00	$85.95
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - FREE AIR (HAZ. WASTE) LABORERS LABORERS (FREE AIR TUNNEL)	6/1/2026	$55.55	$10.90	$9.75	$10.25	$0.00	$86.45
	12/1/2026	$57.05	$10.90	$9.75	$10.25	$0.00	$87.95
For apprentice rates see "Apprentice- LABORER"							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
VAC-HAUL	6/1/2026	$42.24	$16.17	$21.78	$0.00	$0.00	$80.19
TEAMSTERS JOINT COUNCIL NO. 10	12/1/2026	$42.24	$16.17	$23.52	$0.00	$0.00	$81.93
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2027	$42.24	$16.77	$23.52	$0.00	$0.00	$82.53
VOICE-DATA-VIDEO TECHNICIAN	9/6/2026	$37.04	$15.96	$14.20	$4.07	$0.00	$71.27
ELECTRICIANS LOCAL 96							
ELECTRICIANS LOCAL 96							

Apprentice: VOICE-DATA-VIDEO TECHNICIAN

Effective Date: 9/6/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$18.52	$15.96	$0.56	$4.07	$0.00	$39.11
2	55.00	$20.37	$15.96	$0.61	$4.07	$0.00	$41.01
3	60.00	$22.22	$15.96	$13.76	$4.07	$0.00	$56.01
4	65.00	$24.08	$15.96	$13.81	$4.07	$0.00	$57.92
5	70.00	$25.93	$15.96	$13.87	$4.07	$0.00	$59.83
6	75.00	$27.78	$15.96	$13.92	$4.07	$0.00	$61.73
7	80.00	$29.63	$15.96	$13.98	$4.07	$0.00	$63.64
8	85.00	$31.48	$15.96	$14.03	$4.07	$0.00	$65.54

Apprentice to Journeyworker Ratio: 1:1

WAGON DRILL OPERATOR	6/1/2026	$41.91	$10.90	$9.75	$9.11	$0.00	$71.67
LABORERS	12/1/2026	$43.35	$10.90	$9.75	$9.11	$0.00	$73.11
LABORERS - ZONE 2	6/1/2027	$44.80	$10.90	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.25	$10.90	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$47.75	$10.90	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.25	$10.90	$9.75	$9.11	$0.00	$79.01

For apprentice rates see "Apprentice- LABORER"

WAGON DRILL OPERATOR (HEAVY & HIGHWAY)	6/1/2026	$41.91	$10.90	$9.75	$9.21	$0.00	$71.77
LABORERS	12/1/2026	$43.35	$10.90	$9.75	$9.21	$0.00	$73.21
LABORERS - ZONE 2 (HEAVY & HIGHWAY)							

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

WASTE WATER PUMP OPERATOR	6/1/2026	$59.38	$17.05	$13.35	$3.25	$0.00	$93.03
OPERATING ENGINEERS LOCAL 4	12/1/2026	$60.83	$17.05	$13.35	$3.25	$0.00	$94.48
OPERATING ENGINEERS LOCAL 4							

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

WATER METER INSTALLER	3/1/2026	$55.90	$13.10	$9.71	$8.06	$0.00	$86.77
PLUMBERS LOCAL 4							
PLUMBERS LOCAL 4							

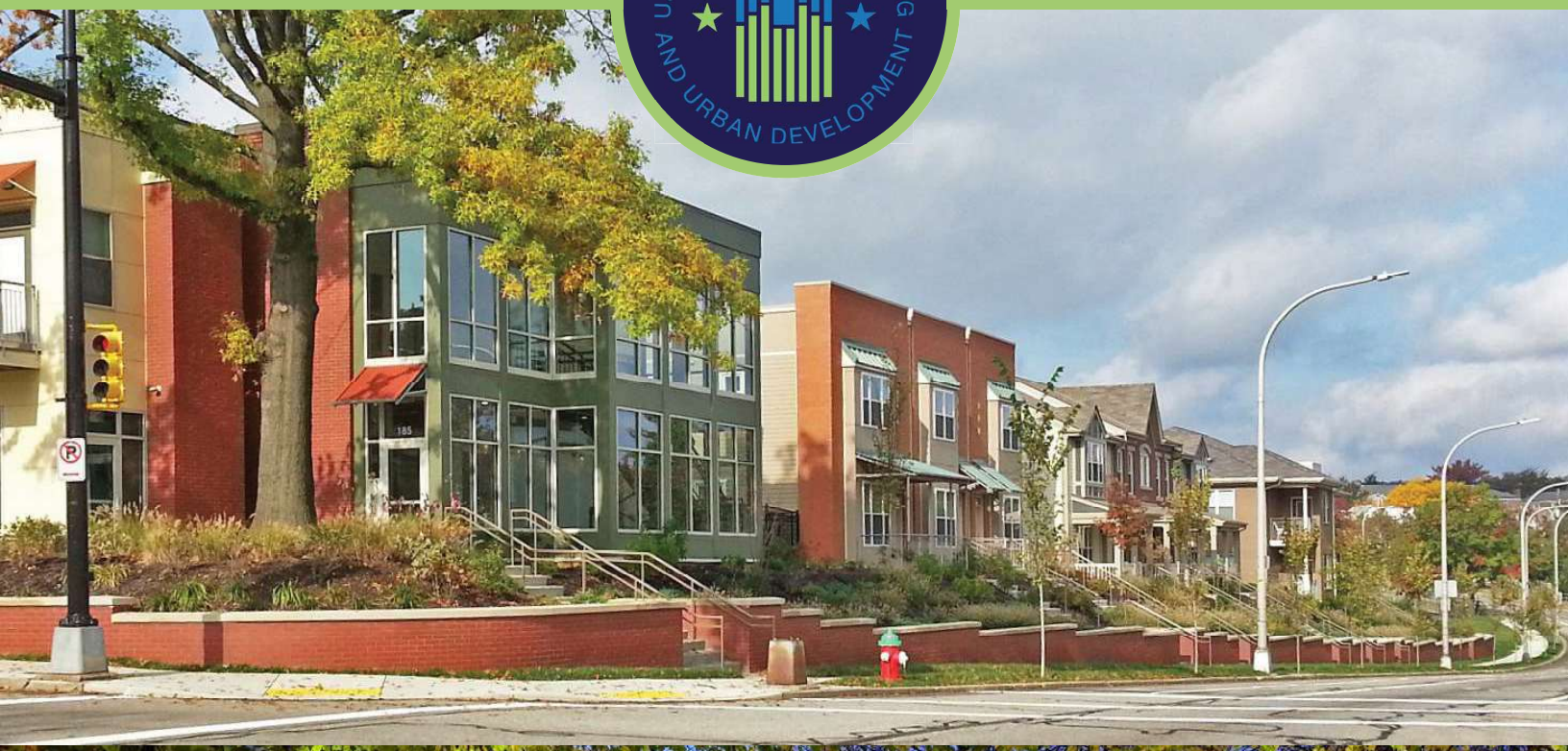
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"

Additional Apprentice Information

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.



DAVIS-BACON AND LABOR STANDARDS

AGENCY/CONTRACTOR GUIDE

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INTRODUCTION

This Guide has been developed as part of HUD's communications strategy with its approximately 5,000 client agencies, and contractors performing work on construction projects that are assisted by the U.S. Department of Housing and Urban Development and subject to Davis-Bacon prevailing wage requirements. This Guide does not address contractor requirements involved in direct Federal contracting where HUD or another Federal agency enters into a procurement contract. While the guidance contained in this Guide is generally applicable to any Davis-Bacon-covered project, specific questions pertaining to direct Federal contracts should be addressed to the Contracting Officer who signed the contract for the Federal agency.

This Guide has been designed to help agencies develop organizational and administrative policies that will enable them to meet labor standards contractual responsibilities in the administration of HUD-assisted programs as efficiently as possible. It is also useful as a training tool and a ready reference for compliance staff. Further, it may be used by contractors to provide further background. While this Guide is intended to address numerous situations, it was not written to cover every possible labor standards issue. If there is a labor standards issue not addressed in this Guide, please contact your local HUD Labor Standards Specialist (LSS). Throughout this Guide, the acronym "LCA" or "LCAs" shall mean state, tribal, and local agencies.

This Guide also provides information to assist with Davis-Bacon labor standards compliance. HUD's Office of Davis-Bacon and Labor Standards worked with the U.S. Department of Labor's Wage and Hour Division to ensure that the labor standards provisions required to be incorporated in Davis-Bacon contracts and the specifics of complying with them represent the latest information. The U.S. Department of Labor (DOL) has general administrative oversight of all Federal contracting agencies, such as HUD, which administer the day-to-day responsibilities of enforcing Davis-Bacon provisions in construction contracts they either fund or assist in funding.

This Guide contains five main chapters. The first chapter includes basic DBA definitions that affect every Davis-Bacon-covered project. The second chapter lists the responsibilities of state, tribal, and local contracting agencies that administer HUD programs. The third chapter includes the laws and regulations associated with Federal labor standards administration and enforcement. The fourth chapter describes LCA flexibility for labor standards responsibilities. The fifth and final chapter discusses payroll compliance reviews and corrections.

Finally, not all HUD construction projects are covered by Davis-Bacon wage rates. For the pur¬pose of this Guide, we are assuming that a determination has already been made that Davis-Bacon wage rates are applicable. If you need assistance in determining whether Davis-Bacon wage rates apply to a project or if you need other related technical assistance, please contact the HUD Labor Standards Field staff for your area. If you do not know which staff to contact, a list of Labor Standards field offices with their geographic areas, telephone numbers and email addresses are located on HUD's Home Page at the address below.

RESOURCE

Visit the Office of Davis Bacon and Labor Standards online:
www.hud.gov/program_offices/davis_bacon_and_labor_standards

KEY LABOR STANDARDS OBJECTIVES OF THE GUIDE

The Office of Davis-Bacon and Labor Standards has identified five Key Labor Standards Objectives—the basics of what must be accomplished in order to protect workers' rights. We also identified all the policies, procedures, and paperwork at our disposal—what we do ourselves and what we impose on contractors. HUD eliminated superfluous requirements and will not institute policies, procedures, or paperwork that is not required by statute or regulation, or that does not contribute to one or more of the Key Objectives.

Apply Davis-Bacon requirements properly

Make certain that labor standards, including Davis-Bacon prevailing wage rates, are applied where required. Ensure that any exemptions or exceptions are identified.

Through education and advice, support contractor compliance with labor standards

Provide basic training and technical support to contractors to ensure that they understand their obligations under prevailing wage and reporting requirements.

Monitor contractor performance

Perform reviews of certified payroll submissions and other information to help ensure contractor compliance with labor standards provisions and the payment of prevailing wages to workers.

Investigate probable violations and complaints of underpayment

Thoroughly explore any evidence of violations, especially allegations of underpayment.

Pursue debarment and other available sanctions against repeat labor standards violators

Carry out a zero tolerance policy toward contractors who violate prevailing wage laws.

RESOURCE

Program technical guidance

For interpretations of program requirements or handbooks and instructions on the use of forms:

Housing Programs - See our Contact List for help.

BASIC DBA DEFINITIONS

There are several compliance principles, definitions, and interpretations that affect every Davis-Bacon-covered project.

Responsibilities of employers

All employers (contractors, subcontractors, and any lower-tier subcontractors) are required to pay all laborers and mechanics employed or working on the site of the work unconditionally and not less often than once per week the full amount of wages and bona fide fringe benefits computed at rates not less than those contained in the wage decision. Employers must prepare, certify, and submit weekly payroll reports reflecting all the laborers and mechanics (employees) engaged in construction on the site of the work. Employers may also be required to submit related documentation in order to demonstrate compliance.

Responsibilities of the principal (prime) contractor

The principal contractor (also referred to as the "prime contractor") is responsible for the full compliance of all employers (itself, subcontractors, and any lower-tier subcontractors) with the labor standards provisions applicable to the project.

Prime contractor

The principal contractor.

Subcontractor

All subcontractors and lower-tier subcontractors.

Employer

Any contractor, subcontractor, or lower-tier subcontractor that has engaged the services of laborers or mechanics on the project.

To make this Guide easier to understand, the term "prime contractor" will mean the principal contractor; "subcontractor" will mean all subcontractors including lower-tier subcontractors; and the term "employer" will mean all contractors as a group, including the prime contractor and any subcontractors and lower-tier subcontractors.

Laborers and mechanics

Those individuals whose duties are manual or physical in nature, including workers who are performing the work of a trade (e.g., electrician). "Laborers" and "mechanics" include apprentices, trainees, helpers, and, for contracts subject to the Contract Work Hours and Safety Standards Act (CWHSSA), watchmen and guards.

Working foremen

Foremen or supervisors that perform construction work and devote more than 20% of their time as a laborer or mechanic are treated, for labor standards purposes, as "laborers" or "mechanics" for their time spent working as a laborer or mechanic.

Exclusions

Persons whose duties are primarily administrative, managerial, or clerical are not laborers or mechanics.

Employee

Every person who performs the work of a laborer or mechanic is "employed" regardless of any contractual relationship that may be alleged to exist between a contractor or subcontractor and such person.

Working subcontractors

Persons who perform the work of laborers or mechanics and who represent themselves to be owners of businesses, sole proprietors, or self-employed are not exempt from prevailing wage requirements. These laborers and mechanics are "employed" and are entitled to the prevailing wage for the type of work they perform, and must be reported on the payroll report for their craft, hours of work, and wages paid. For additional information, see LR-96-01, Labor Standards for Self-Employed Laborers and Mechanics.

Administrative allowances

HUD permits administrative allowances concerning payroll reporting and certification requirements relating to the following:

- Owners of Businesses Working with Their Crew
- Owner/Operators of Power Equipment
- Owner/Operators of Trucks

Apprentice

A person employed and individually registered in a bona fide apprenticeship program. Bona fide programs are those that have been registered with DOL, Employment and Training Administration, Office of Apprenticeship, or with a DOL-recognized State Apprenticeship Agency (SAA). (Note that an SAA must also partner with a State Apprenticeship Council (SAC). The SAC must consist of an equal number of representatives of employer and employee organizations.)

Probationary apprentice

A person in the first 90 days of probationary employment as an apprentice in a bona fide apprenticeship program but who has not yet been formally registered in such program may be considered an "apprentice" provided that DOL or SAC has certified that such person is eligible for probationary employment as an apprentice.

Pre-apprentice

A person who is employed as a "pre-apprentice"—that is, in a preparatory position which may result in registration in an apprenticeship program—is not considered to be an "apprentice."

Trainee

A person registered and receiving on-the-job training in a construction occupation pursuant to a training program approved in advance by the Office of Apprenticeship Training.

Prevailing wages or wage rates

Davis-Bacon prevailing wage rates generally appear as a basic hourly rate plus fringe benefits, if any. "Prevailing wage" is made up of two interchangeable components: the basic hourly wage, and fringe benefits. The total of the basic hourly wage and fringe benefits comprises the "prevailing wage" obligation. This obligation may be met by any combination of cash wages and creditable "bona fide" fringe benefits provided by the employer. For example:

The Davis-Bacon wage decision requires:

Basic Hourly Rate	$10.00
Fringe Benefits	$1.00
Total Prevailing Wage	$11.00

Employers may comply by paying:

1. $11.00 in cash wages;
2. $10.00 plus $1.00 in bona fide fringe benefits; or
3. Any combination of wages and benefits that totals $11.00 per hour.

Piece rate/piece work employees

Employees whose earnings are calculated by the amount of work produced (rather than hours worked) must receive no less than the applicable DBRA/MWD (Davis-Bacon and Related Acts/Maintenance Wage Determination) wage rate based upon the hours of work performed. The employer must divide the piece rate earnings by the actual hours worked to determine the "effective" hourly rate. The effective hourly rate must be calculated for each week's earnings and must be no less than the applicable prevailing wage rate. It does not matter whether the effective hourly rate changes from week to week as long as the result is at least as much as the prevailing wage rate. If the effective hourly rate is less than the applicable prevailing wage rate, the employee must be compensated at the prevailing wage rate for all hours worked.

Fringe benefits

Fringe benefits may include:

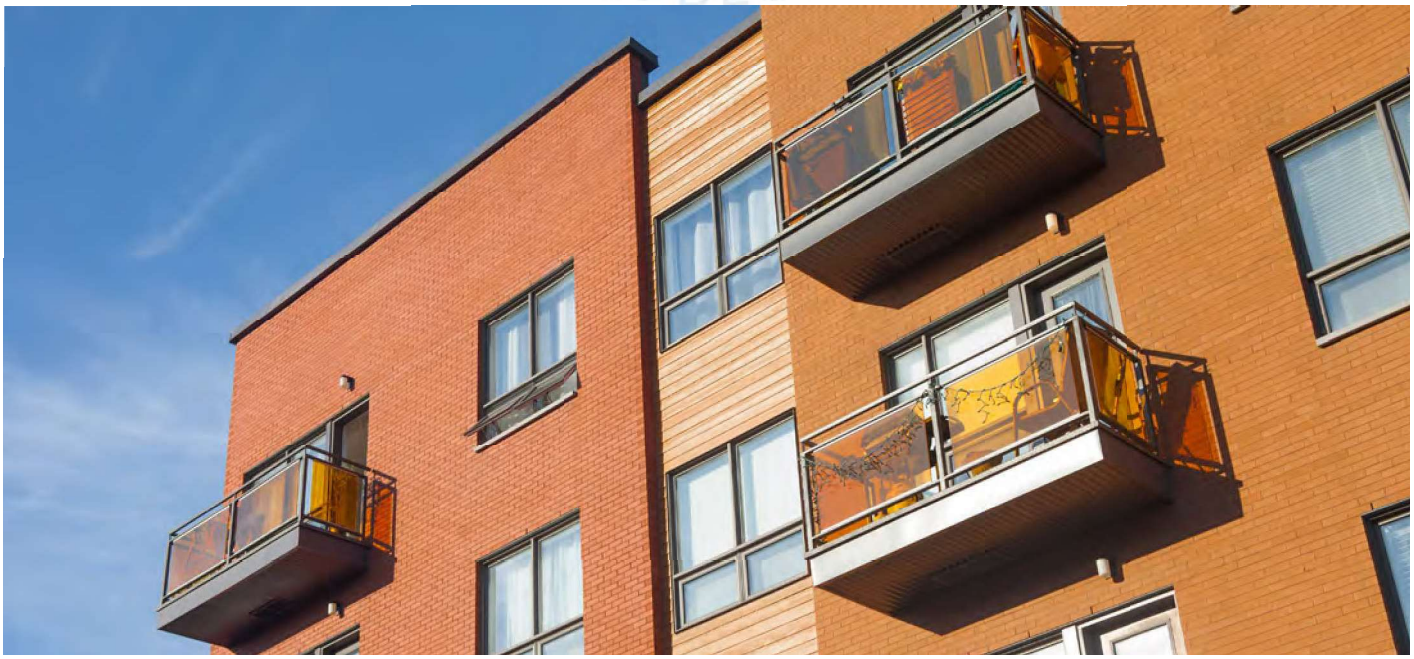
- Sick, vacation, or holiday pay;
- Costs to defray expenses of apprenticeship or similar programs;
- Medical or hospital care;
- Supplemental unemployment benefits;
- Life insurance;
- Pensions on retirement or death;
- Compensation for injuries or illness resulting from occupational activity;
- Other bona fide fringe benefits; or
- Insurance to provide any of the above.

MORE INFO

In addition, fringe benefits may reflect the rate of costs to the employer that may be reasonably anticipated in providing bona fide fringe benefits pursuant to an enforceable commitment to carry out a financially responsible program.

MORE INFO

Fringe benefits do not include employer contributions or payments required by other federal, state, or local law, such as FICA (Federal Insurance Contributions Act), workers' compensation, or unemployment compensation.



Overtime

Overtime (O/T) hours are defined as all hours worked in excess of 40 hours in any workweek. Where governed by Federal labor standards, O/T hours shall be compensated at not less than one and one-half times the regular rate of basic pay plus the straight-time (S/T) rate of any required fringe benefits.

Deductions

The employer may make payroll deductions as permitted by DOL regulations in 29 CFR Part 3. These regulations prohibit the employer from requiring employees to "kick back" any of their earnings. Deductions may include employee obligations for income taxes, Social Security payments, insurance premiums, retirement contributions, savings accounts, and any other legally permissible deduction authorized by the employee. Deductions may also be made for payments on judgments and other financial obligations legally imposed against the employee (which will require documentation).

Site of work

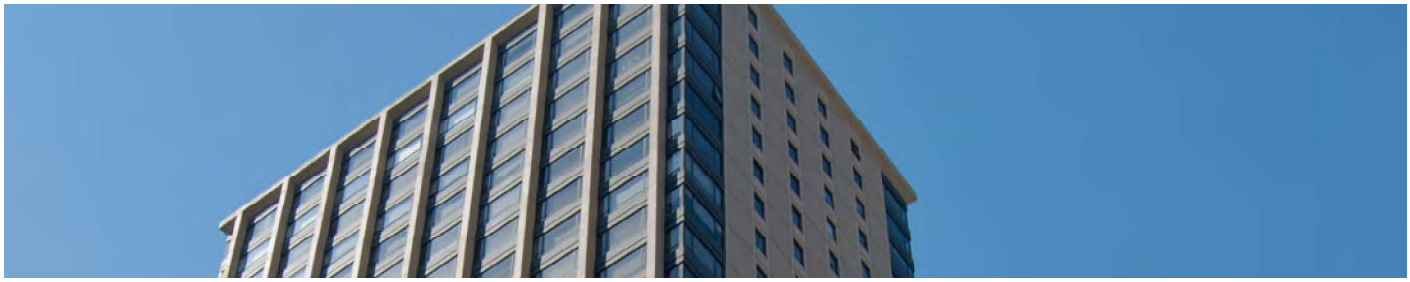
The "site of work" is limited to the physical place or places where the construction called for in the contract will remain when work on it has been completed. "Site of work" includes other adjacent or nearby properties used by the contractor/subcontractor in the construction of the project (e.g., fabrication sites) provided they are dedicated exclusively or nearly so to the performance of the contract or project, and are so located in proximity to the actual construction location that it would be reasonable to include them.

Proper designation of trade

Each laborer and mechanic shall be classified in accordance with the work classifications listed on the wage decision and the actual type of work they perform and shall be paid the appropriate wage rate and fringe benefits for the classification regardless of their level of skill. In other words, if someone is performing carpentry work on the project, they must be paid no less than the wage rate on the wage decision for carpenters even if they aren't considered by the employer to be fully trained as a carpenter. Remember, the only people who can be paid less than the rate for their craft are apprentices and trainees registered in approved programs.

Split classification

Laborers and mechanics that perform work in more than one classification may be compensated at the rate specified for each classification provided that the employer maintains time records that accurately set forth the time spent in each classification in which the work was performed. If accurate time records are not maintained, the employee shall be compensated at the highest of all wage rates for the classifications in which work was performed.



LCA RESPONSIBILITIES

State, tribal, and local contracting agencies (LCAs) that administer HUD programs agree to administer and enforce Davis-Bacon requirements as a condition for receiving HUD program assistance. LCAs have the following responsibilities:

1. Designate appropriate staff (e.g., a Contract Administrator) before the start of construction to ensure compliance with all applicable labor standards requirements and to act for and in liaison with HUD. Provide the name(s) of the staff to the appropriate HUD Field Office of Davis-Bacon and Labor Standards.

2. Establish a construction contract management system that meets the standards of 2 CFR Part 200 Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards.

3. Ensure that all bid documents, contracts, and subcontracts contain the applicable Davis-Bacon wage decision and Federal labor standards provisions.

4. Ensure that no contract is awarded to a contractor that is ineligible (e.g., debarred) for Federally-assisted work.

5. Conduct on-site inspections including interviews with laborers and mechanics employed on the construction project. Ensure that the applicable Davis-Bacon wage decision, DOL's Davis-Bacon poster (Form WH-1321), and additional classifications are displayed at the job site.

6. Review certified payroll reports (CPRs) and related documentation. Identify any discrepancies and/or violations. Ensure that any needed corrections are made promptly, including the payment of wage restitution as needed, and the assessment and collection of liquidated damages, as appropriate.

7. Maintain full documentation of Federal labor standards administration and enforcement activities.

8. Refer potential criminal or complex enforcement actions to HUD, in addition to CWHSSA liquidated damages assessments for O/T violations and debarment recommendations.

9. Comply with all HUD requirements concerning statutory, program, and/or other requirements.

10. Prepare Federal labor standards enforcement reports as required in DOL regulations (29 CFR Part 5, § 5.7).

LAWS AND REGULATIONS

The Davis-Bacon Act (DBA)

The DBA, enacted in 1931, applies to contracts in excess of $2,000 for construction, alteration, and/or repair of public buildings or public works, including painting and decorating, to which the United States or the District of Columbia is a party. This type of applicability is referred to as direct Davis-Bacon Act or DBA coverage. An example of DBA coverage is when HUD contracts directly for repairs to HUD-owned properties. HUD's Office of the Chief Procurement Officer manages these types of contracts. The DBA requires that the advertised specifications for such contracts contain a provision stating that the minimum wages to be paid to various classes of laborers and mechanics must be based upon the wages found to be prevailing by the Secretary of Labor.

Most HUD construction work is not covered by the DBA since HUD does not usually contract directly for construction work. Rather, Davis-Bacon wage rates apply to HUD programs because of prevailing wage requirements expressed in HUD "Related Acts" such as the U. S. Housing Act of 1937 and the Housing and Community Development Act of 1974, as amended. The Related Acts (referred to throughout this Guide as the Davis-Bacon and Related Acts or DBRA) are discussed further in Section 5.9.

The DBA includes provisions that:

1. Require the contractor or subcontractor to pay all mechanics and laborers at least once per week;
2. Prohibit contractors or subcontractors from taking deductions or rebates from wages earned by laborers and mechanics;
3. Require the contractor or subcontractor to pay Davis-Bacon wages to all laborers and mechanics employed on the site of the work regardless of their skill level, and regardless of any contractual relationship alleged to exist between the laborers and mechanics and the contractor or subcontractor;
4. Require the contractor or subcontractor to post the scale of wages to be paid (i.e., the applicable Davis-Bacon wage decision) in a prominent and accessible place at the work site;
5. Define prevailing wages to include fringe benefits;
6. Permit the withholding of payments due to the contractor on account of wage restitution that may be found due to the laborers and mechanics;
7. Permit the payment of wage restitution from amounts withheld from contract payments;
8. Permit the termination of the contract where it is found that any laborer or mechanic is underpaid; and
9. Permit the debarment of persons or firms found to have disregarded their obligations to employees and subcontractors.

The Contract Work Hours and Safety Standards Act (CWHSSA)

The CWHSSA applies to both direct federal contracts and to federally-assisted contracts where those contracts require or involve the employment of laborers and mechanics and where federal wage standards (e.g., Davis-Bacon or HUD-determined prevailing wage rates) are applicable. CWHSSA provisions apply to all laborers and mechanics, including watchmen and guards, employed by any contractor or subcontractor. CWHSSA also applies to maintenance laborers and mechanics employed by contractors or subcontractors engaged in the operation of Public Housing Agencies (PHA), Tribally Designated Housing Entities (TDHE), and Indian Housing Agencies (IHA) developments.

CWHSSA O/T provisions do not apply to laborers and mechanics employed directly by PHAs or IHAs. However, O/T provisions generally apply to these workers under the Fair Labor Standards Act (FLSA). HUD does not have authority to enforce FLSA violations. Refer complaints of FLSA violations to DOL, Wage and Hour Division.

CWHSSA provides that all O/T hours (defined as hours worked in excess of 40 during any workweek on the CWHSSA-covered project site) must be compensated at a rate not less than one and one-half times the regular basic rate of pay. Where CWHSSA O/T provisions are applicable, compensatory time in lieu of premium pay for O/T hours is not permissible. In the event of O/T violations, the CWHSSA renders the contractor liable to the underpaid workers for wage restitution and to the United States Government for liquidated damages computed per person per day at a rate that DOL publishes annually. It is a federal criminal misdemeanor to intentionally violate CWHSSA standards.

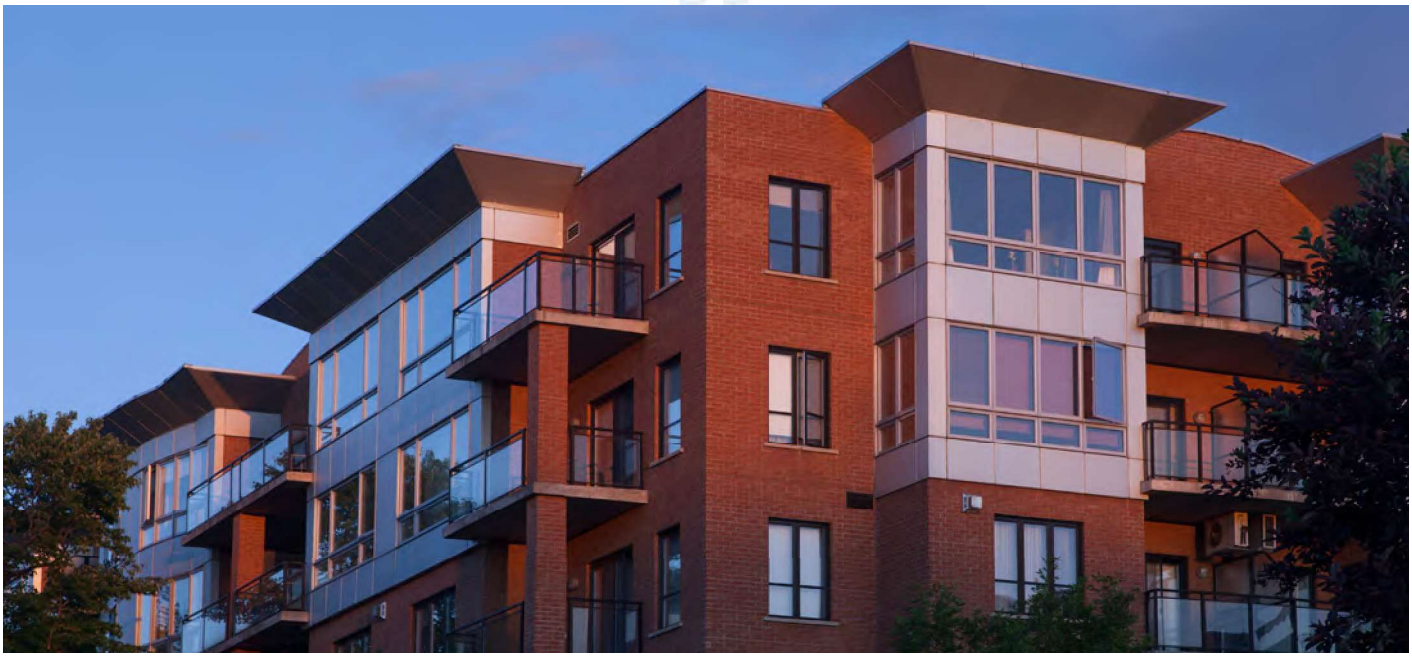
Exemptions:

- CWHSSA O/T provisions do not apply where the federal assistance is only in the nature of a loan guarantee or insurance.
- CWHSSA O/T provisions do not apply to prime contracts of $100,000 or less.

RESOURCE

DOL posts current fines at:

https://www.dol.gov/whd/govcontracts/cwhssa.htm#cmp



The Copeland Act (Anti-Kickback Act)

The Copeland Act concerns three facets of prevailing wage compliance:

1. The "anti-kickback" provision prohibits contractors and subcontractors from inducing an employee working on a covered contract to give up any part of the compensation to which he or she is entitled. Violations are a criminal offense and are punishable by a $5,000 fine or imprisonment up to five years, or both.

2. Associated DOL regulations restrict payroll deductions to those that are permissible without DOL approval as explained at 29 CFR § 3.5; deductions that require advance DOL approval are explained at 29 CFR § 3.6.

3. The Act requires the submission of weekly CPRs accompanied by a Statement of Compliance by all contractors and subcontractors engaged in such construction, prosecution, completion, or repair. The willful falsification of a CPR or statement of compliance may subject the employer to civil or criminal prosecution under § 1001 of Title 18 and § 3729 of Title 31 of the United States Code (USC), and may also be a cause for debarment.

Exemptions:

- Copeland Act CPR requirements are applicable only where Davis-Bacon (DBA or DBRA) prevailing wage provisions are applicable.
- Copeland Act anti-kickback provisions do not apply where the only federal assistance is a loan guarantee.

The Fair Labor Standards Act (FLSA)

The FLSA governs matters such as federal minimum wage rates and O/T. These standards are generally applicable to any labor performed and may be pre-empted by other (often more stringent) federal standards such as the DBRA prevailing wage requirements and CWHSSA O/T provisions. The authority to administer and enforce FLSA provisions resides solely with DOL.

Portal-to-Portal Act (PA)

The PA applies to the DBA and prevents the commencement of any court suit for unpaid S/T wages more than two years after performance of the work (three years in the case of willful violations), where permissible under the law. However, DOL's position is that the PA does not apply to administrative actions initiated through Administrative Law Judge (ALJ) hearing procedures; thus, the PA does not preclude corrective administrative action after two (or three) years.

The PA does not apply to federally-assisted (DBRA) projects. Instead, the various State statutes of limitations apply to such projects in private actions where they are judicially determined to be permissible under the law. The Federal six-year statute of limitations applies in government enforcement actions.

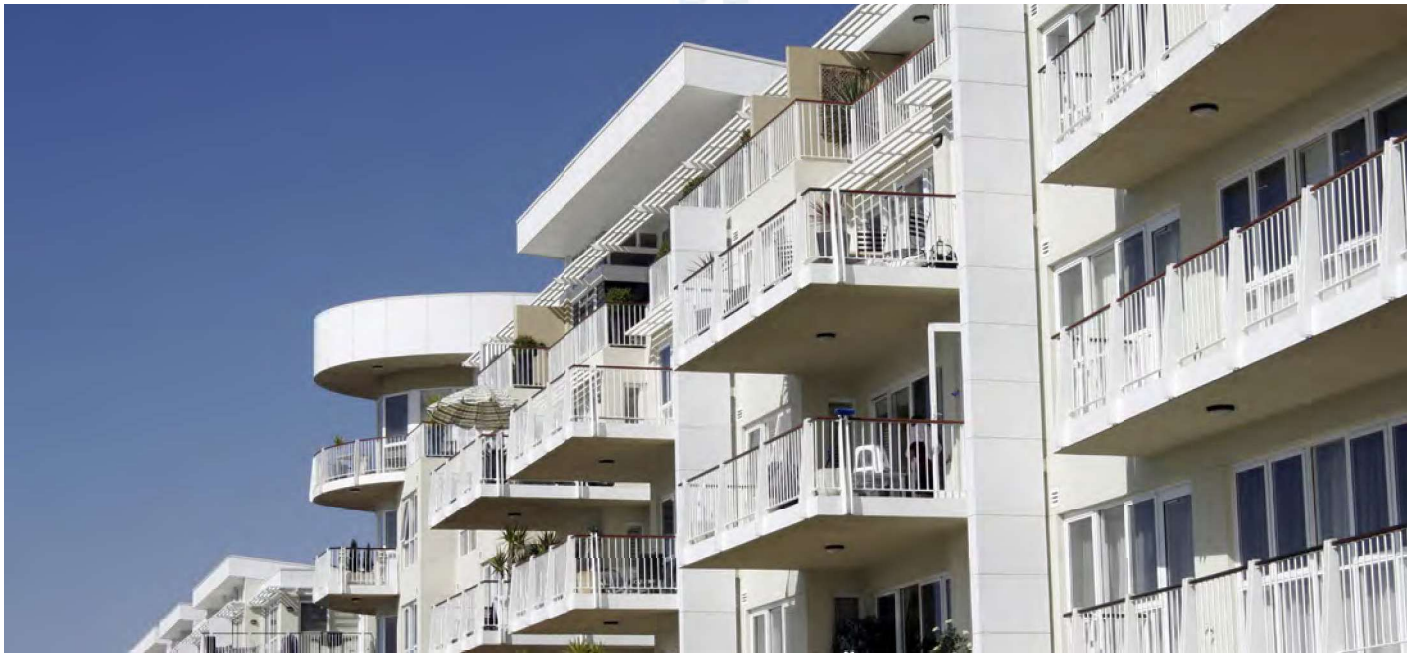
McNamara-O'Hara Service Contract Act (SCA)

The SCA governs maintenance and other service work and applies when the Federal Government or the District of Columbia contracts directly for such services and the value of the contract exceeds $2,500. SCA coverage in HUD programs is limited because HUD infrequently enters into direct contracts for services in the administration of its programs. By way of example, however, a contract for maintenance service at an HUD-owned multifamily property would be covered by the SCA. Like DBA contracts, SCA contracts are managed under the auspices of HUD's Office of the Chief Procurement Officer. SCA enforcement authority resides solely with DOL.

Davis-Bacon Regulations

DOL has published rules and instructions concerning Davis-Bacon and other labor laws in the Code of Federal Regulations (CFR). These regulations can be found in Title 29 CFR Parts 1, 3, 5, 6, and 7. Part 1 explains how DOL establishes and publishes DBA wage determinations (also referred to as wage decisions) and provides instructions on how to use the determinations. Part 3 describes Copeland Act requirements for payroll deductions and the submission of weekly CPRs. Part 5 covers the labor standards provisions that are in contracts relating to Davis-Bacon Act wage rates and the responsibilities of contractors and contracting agencies to administer and enforce the provisions. Part 6 provides for administrative proceedings enforcing Federal labor standards on construction and service contracts. Finally, Part 7 sets parameters for practice before the Administrative Review Board. These regulations are used as the basis for administering and enforcing the laws.

DOL Regulations are available online: www.ecfr.gov/current/title-29



Construction Contract Provisions and Labor Standards Administration

Labor standards administration involves the activities that take place primarily before construction begins. Administration sets the stage for the compliance activities that occur during the construction phase. The first and sometimes most difficult step is determining whether and to what extent Davis-Bacon wage standards apply to a particular contract or project. The Factors of Labor Standards Applicability (see Appendix II-6) should be helpful. Most HUD-assisted construction work is covered by Davis-Bacon, but there are some exceptions. The best and safest approach is to first assume that Davis-Bacon requirements will be applicable whenever the contract/project involves construction work valued in excess of $2,000, then look more closely to see if there is any reason for non-coverage. Each contract subject to Davis-Bacon labor standards requirements must contain labor standards clauses and a Davis-Bacon wage decision. These documents are normally wound into the contract specifications.

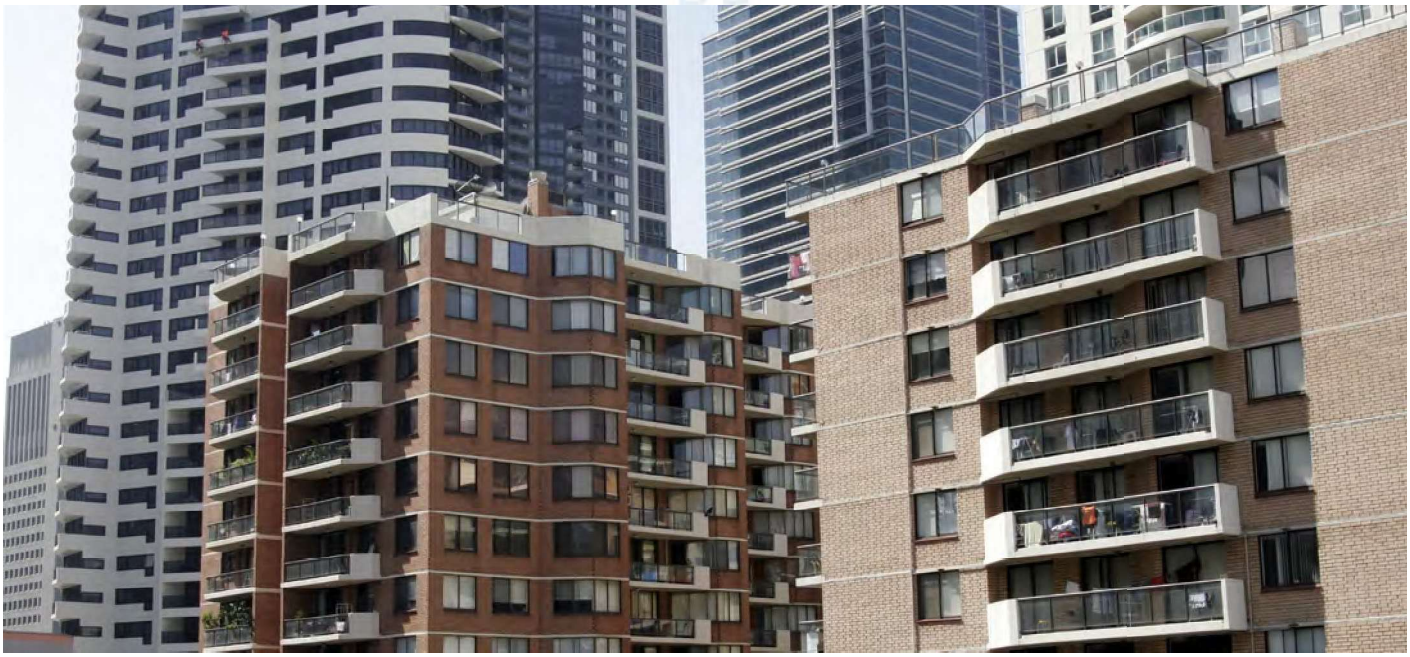
The labor standards clauses

The contract for construction is the vehicle to ensure contractor compliance and Davis-Bacon wage enforcement. Therefore, the bid specifications and/or the contract for each project subject to Davis-Bacon wage rates must contain both a Davis-Bacon wage decision and labor standards clauses. The labor standards clauses describe the responsibilities of the contractor concerning Davis-Bacon wages and obligate the contractor to comply with the Davis-Bacon wage and reporting requirements and with the O/T provisions of the CWHSSA (applicable only when the prime contract is valued at over $100,000).

The labor standards clauses also provide for remedies in the event of violations, including the withholding of payments due to the contractor to ensure the payment of wages or liquidated damages that may be found due, and sanctions should violations occur. These contract clauses enable the contract administrator to enforce the Federal labor standards applicable to the project. HUD has standard forms that contain contract clauses. For example, the HUD-92554M, Supplementary Conditions Of The Contract for Construction, which is issued primarily for FHA (Federal Housing Administration) multifamily housing and other construction projects administered by HUD; the HUD-4010, Federal Labor Standards Provisions, which is used for CDBG (Community Development Block Grant) and HOME (HOME Investment Partnerships Program) projects; and the HUD-5370, General Conditions for Construction Contracts (construction contracts >$150,000) or the HUD-5370-EZ, General Contract Conditions for Small Construction/Development Contracts (construction contracts >$2,000 but ≤$150,000) which are used for Public and Indian Housing projects. These should be wound into the contract specifications or incorporated by specific reference in the bid/contract documents (see Labor Relations Letter 96-03).

RESOURCE

A fillable version of this form is available online at HUDClips www.hud.gov/program_offices/administration/hudclips/forms Contact the contract administrator monitoring the project for assistance with a Project Wage Rate.



Specific Davis-Bacon Related Act (statute) for the program involved

Related Acts are program statutes that contain provisions requiring compliance with the wages that the Secretary of Labor finds to be prevailing pursuant to the Davis-Bacon Act. These are commonly referred to as the Davis-Bacon and Related Acts or DBRA.

HUD Related Acts include (but are not limited to) the:

- National Housing Act;
- U. S. Housing Act of 1937;
- Housing and Community Development Act of 1974;
- National Affordable Housing Act of 1990; and
- Native American Housing Assistance and Self-determination Act of 1996, each as amended.

Many of the labor provisions in HUD Related Acts contain applicability thresholds based upon the number of dwelling units involved. Some thresholds are based upon the amount of HUD assistance or the use of HUD funds or assistance. In addition, most HUD Related Acts contain exemptions from prevailing wage coverage for bona-fide volunteers. It is important for DBLS and LCA staff to be familiar with the statutory provisions and how these are interpreted.

The labor provisions found in current HUD Related Acts are excerpted for reference in Appendix II-1 to this Guide. Applicability factors relating to specific HUD Related Acts are in Appendix II-6.

Labor Standards Letters

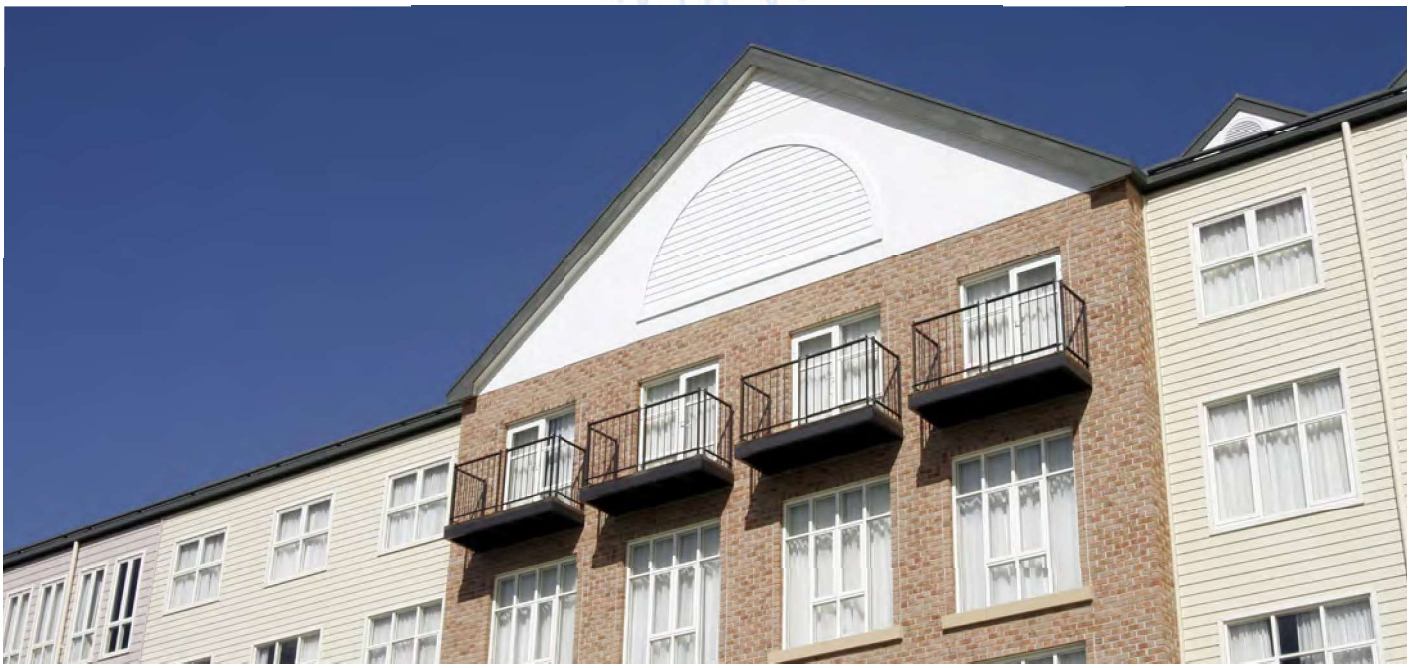
This special directives series is designed to provide current and thorough guidance on Davis-Bacon issues in HUD programs. Popular topics include Davis-Bacon applicability, and prevailing wage requirements concerning self-employed laborers and mechanics. Labor Standards Letters are available online at the Davis-Bacon and Labor Standards Library: www.hud.gov/program_offices/davis_bacon_and_labor_standards/olr_lrl

HUD Guides

These Guides complement the guidance and instructions provided in HUD Handbook 1344.1, Federal Labor Standards Compliance in HUD Programs. These Guides are also available at the Davis-Bacon and Labor Standards Library.

Davis-Bacon Wage Decisions

The term “wage decision” includes the original decision and any subsequent decisions that modify, supersede, correct, or otherwise change the provisions of the original decision. The term “wage decision” is used within this Guide to mean the Davis-Bacon wage decision. The terms “wage decision” and “wage determination” are used interchangeably. A wage decision is a schedule of construction work classifications, wage rates, and fringe benefits that represent the minimum rates that must be paid to workers employed in those classifications. Wage decisions are established for defined geographic areas, usually by county



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RESOURCE

All current Davis Bacon wage decisions can be accessed online at no cost at www.sam.gov

Character of work

There are four basic categories (or characters) of wage decisions based on the type of construction. DOL established these categories and provides details of each one in All Agency Memoranda Nos. 130 and 131. DOL provides further guidance in All Agency Memorandum 236, Prevailing Wage Resource Book, and Field Operations Handbook, Chapter 15. The four categories include:

1. **Residential:** Residential construction includes the construction, alteration, or repair of single-family houses or apartment buildings of no more than four stories in height. This typically includes all incidental items unless there is an established area practice to the contrary.

Incidental items are elements of a project whose function is to support the principal purpose and do not change the overall character of work. Examples of incidental items include sidewalks and handrails installed to support residential or building projects. While sidewalks intrinsically constitute "highway" construction, this element considered in conjunction with a residential or building project becomes incidental to the principal purpose of the construction and is subject to the same wage decision that applies to the principal purpose.

Character of work (continued)

2. **Building:** Building construction generally is the construction of sheltered enclosures with walk-in access for the purpose of housing persons, machinery, equipment, or supplies. This category includes buildings exceeding four stories in height that have housing units and buildings of four stories or less that do not have housing units. This category also includes incidental items such as grading, sidewalks, and utilities. Building examples include high-rise apartment buildings, nursing homes and convalescent facilities, community centers, fire stations, commercial buildings, parking garages, and dormitories.
3. **Highway:** Highway construction includes the construction, alteration, or repair of roads, streets, highways, alleys, parking areas, and other similar projects not incidental to the main category of construction, which is either residential or building for housing development projects.
4. **Heavy:** Heavy construction includes those projects that are not properly classified as "residential," "building," or "highway." Some examples include antenna towers, canals, landscaping, drainage and irrigation projects, permanent erosion control, storm sewers, and storage tanks.

General wage decisions

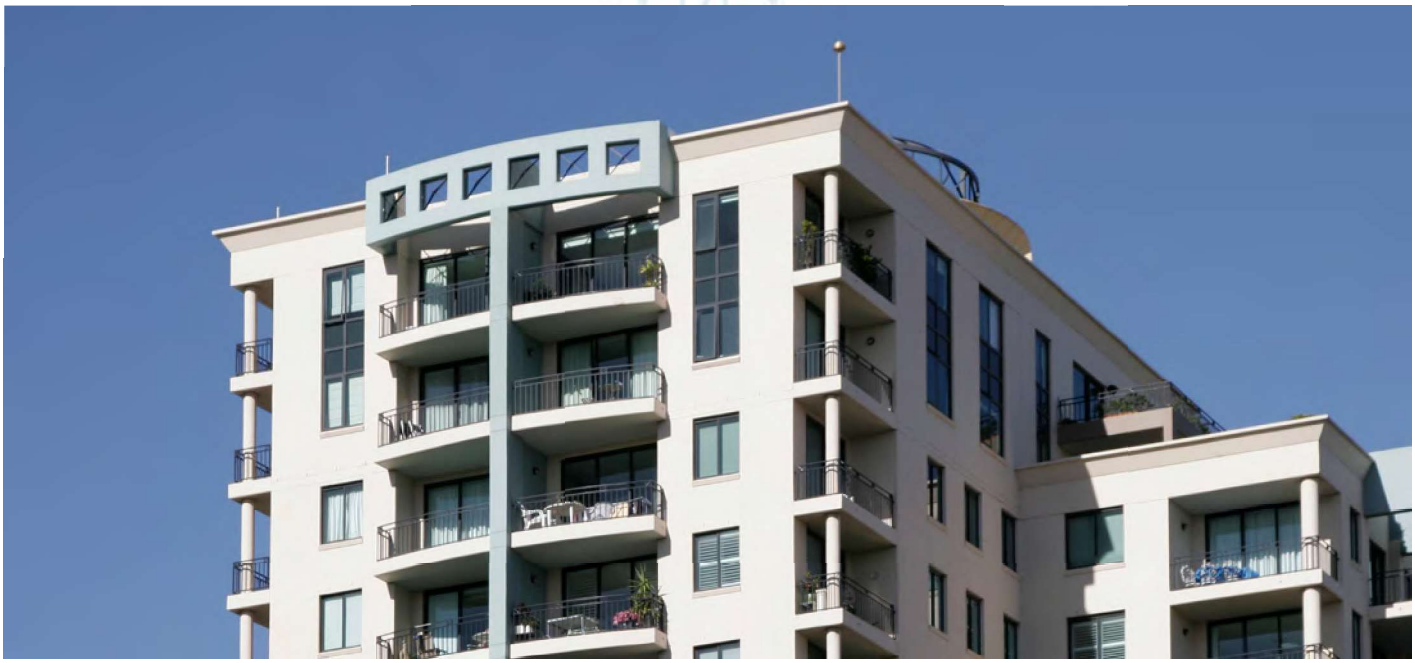
Most Davis-Bacon wage decisions are general wage decisions. DOL usually publishes these annually and may modify or supersede them throughout the year. LCAs and HUD Labor Standard Specialists (LSS) may use general wage decisions without advance notice or approval from DOL. Most Davis-Bacon wage decisions are available as published general wage decisions.

General wage decisions and project wage decisions may be modified from time to time to keep them current, correct errors, and for other purposes. Modifications may be limited to one or more particular work classifications and wage rates. Modifications are effective to a project if HUD or an LCA receives them, or if notice of the modification is published at www.sam.gov prior to the lock-in date. Modifications to a project wage decision expire on the same date as the original project wage decision. A modification to a general wage determination remains in effect until it is superseded by a subsequent modification, or the original general wage decision is superseded or cancelled.

Project wage decisions

If an appropriate wage decision (by location, character of work, or specific trade required) is not published in the general wage decisions, a project wage decision shall be requested from DOL. Project wage decisions are applicable only to the construction work specified on the request to DOL and listed on the front page of the wage decision. Project wage decisions are valid for 180 days from the date of original issuance by DOL. The issuance and expiration dates will be indicated on the front page of the wage decision. Like general wage decisions, project wage decisions may be modified.

A project wage decision may be applicable even though a general wage determination is published which covers the geographic location and character of work involved. For example: A project involves only roof replacement on a 4-story apartment building and the only classification needed for the entire contract is a roofer.



Project wage decisions (continued)

A general wage decision is published for residential construction in the county in which the project is located; however, the general wage decision does not include a roofer classification and wage rate. In this case, the general wage decision is not relevant to the roof replacement and a project wage decision may be requested from DOL.

RESOURCE

General wage decisions and modifications are available at

www.sam.gov

This is the only online location endorsed by DOL. Project wage decisions must be requested on a case by case basis from DOL.

Project wage decisions, as needed

The LCA or LSS shall submit a completed SF-308, Request for Wage Determination And Response to Request, to the DOL National Office, allowing 30 days for receipt of the project wage decision from DOL.

Selecting the correct wage decision

The responsible contracting officer (also referred to as the contract administrator) selects and assigns wage decisions to specific contracts or projects. For HUD-administered projects (e.g., FHA-insured multifamily development), the responsible contracting officer is the LSS. In addition, the LSS provides technical support and oversight to LCAs administering HUD programs in selecting and assigning appropriate wage decisions. Determining wage decisions is dependent upon the geographic location and the character of work (Residential, Building, Highway, and/or Heavy) assigned to the project.

A request for additional classification and wage rates may be made only after contract award. The request must originate with the contractor/employer and must be submitted by the LCA to DOL.

MORE INFO

Conformances (additional classifications)

At times, the wage decision will not contain some of the work classification and wage rates that are needed for the construction work. In these cases, send a form SF 1444 to DOL at

whd-cbaconformance_incoming@dol.gov

Conformances (additional classifications)

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RESOURCE

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Verify contractor eligibility

Once the LCA has selected the contractor to whom they wish to award the contract, the LCA must verify that the contractor is not ineligible (e.g., debarred) from participation in Federal programs. Only the eligibility of the prime contractor needs to be verified. The U.S. General Services Administration (GSA) maintains a list of ineligible contractors, which can be accessed online at www.sam.gov.

An additional classification and wage rate will be approved by DOL where:

1. The requested work classification is used in the area of the project by the construction industry;
2. The work that will be performed is not performed by a work classification already contained in the wage decision;
3. The proposed wage rate bears a reasonable relationship to the wage rates on the wage decision; and
4. The workers that will be employed in the requested work classification (if known) or the workers' representatives (if any) agree with the proposed wage rate.

Provide contractor training

The LCA must make certain that the contractor understands its responsibilities for Davis-Bacon compliance: The principal contractor is responsible for the full compliance of all employers (the contractor, subcontractors, and any lower-tier subcontractors) with the labor standards provisions applicable to the project. LCAs may also wish to provide formal training separate from the contracting process for contractors that are interested in performing work on HUD-assisted contracts and want to learn more about what is involved.

CONTRACTOR RESPONSIBILITIES

See Section 4 in the Contractor Addendum.

CONTRACT ADMINISTRATOR RESPONSIBILITIES

See Section 5 in the Contractor Addendum.

LCA FLEXIBILITY FOR LABOR STANDARDS RESPONSIBILITIES

While some aspects of labor standards administration are inflexible, such as which wage decision is applicable to a specific project, the following aspects are not. For these, HUD leaves the preference of how to achieve end results with the LCA.

LCAs may hold preconstruction conferences for labor standards purposes.

HUD acknowledges that there are many good reasons to hold a preconstruction conference (PCC), and these conferences are strongly encouraged in order to have the opportunity to discuss topics such as construction inspections, progress and contractor payment requirements, Section 3 employment and training, and other issues particular to the project. However, HUD has determined that the time and resources used to conduct and document PCCs for labor standards purposes do not yield measurably better results.

Many contractors have prior Davis-Bacon contract experience and have demonstrated successful performance. These contractors do not require the repetitive basic training that is provided at most PCCs. Contractors new to Davis-Bacon projects that understand the basic requirements and choose not to comply will likely not be persuaded to fully comply just because they attended a PCC.

LCAs may prepare Project Wage Rate Sheets

Some general wage decisions cover large areas (e.g., several counties or different characters of construction) and may contain wage rates that do not apply to the contract/project to which the wage decision applies. Such wage decisions can be difficult to decipher and confusing to contractors and subcontractors, and to the workers reviewing the wage decision to determine whether they are being paid correctly. For ease of reference for the LSS/LCA, the prime contractor and any subcontractors, and the workers, the LSS/LCA may prepare a form HUD-4720, Project Wage Rate Sheet, which should reflect the most commonly used work classifications and wage rates as contained in the wage decision applicable to the project. The Project Wage Rate Sheet should be prepared only after the wage decision has been "locked-in" by contract award or start of construction, as applicable. The Project Wage Rate Sheet does not replace the wage decision; it is only provided as a convenience. If there is a conflict between the Project Wage Rate Sheet and the wage decision, the wage decision prevails.

LCAs can prepare a Project Wage Rate Sheet for contracts using the onscreen fillable versions in either the HUD Forms or DBLS websites. HUD DBLS staff is available to provide assistance to LCAs in preparing Project Wage Rate Sheets. HUD strongly recommends incorporation of the full wage decision text into bid solicitations and contracts, either in hard copy or by specific reference.

LCAs may develop their own labor standards file system

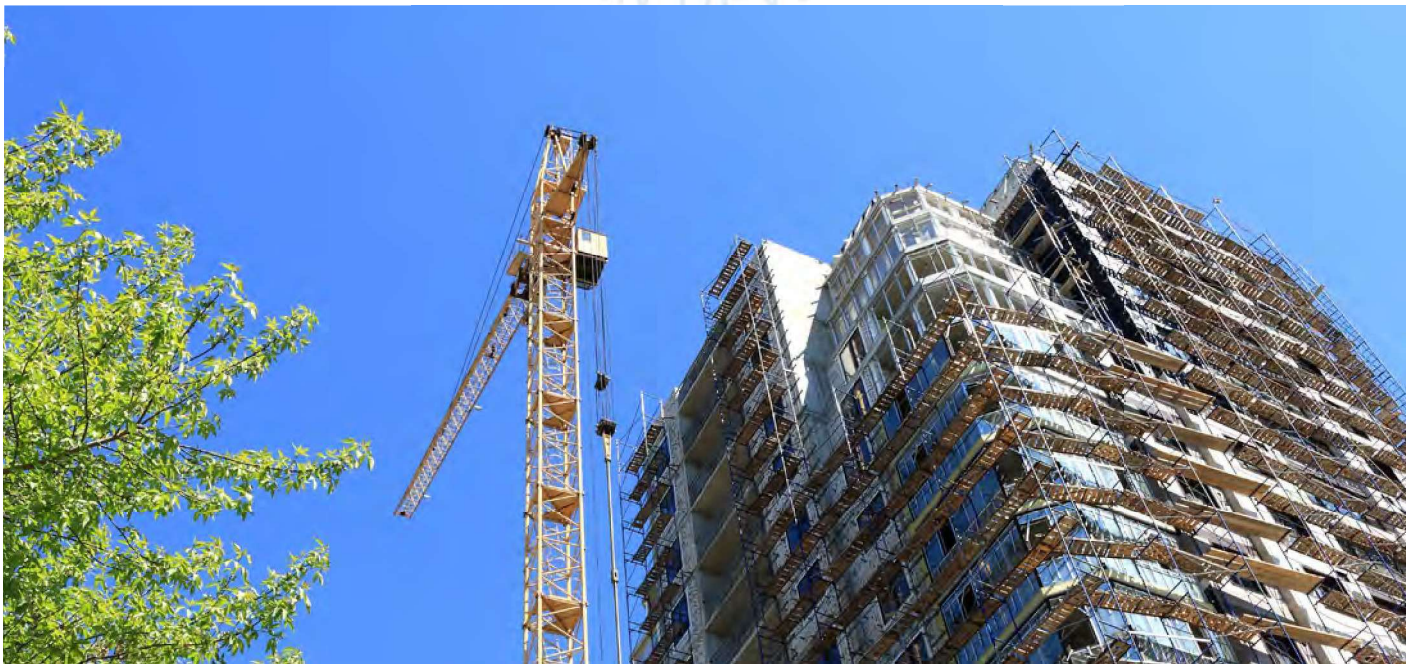
HUD believes that LCAs can best determine how to maintain their files provided that certain minimum requirements are met. The minimum requirements include compliance with DOL regulations that certified payrolls and basic records relating to the payrolls be preserved for no less than three years after completion of the project and the resolution of any enforcement actions that may carry over after completion. In addition, the files must be maintained in such a way that the LCA can utilize them to demonstrate its own compliance with its labor standards administration and enforcement responsibilities. For example, the LCA must, at HUD's request, demonstrate how it has documented that the eligibility of the prime contractor was verified for each contract.

LCAs may target on-site interviews with laborers and mechanics

HUD is interested in using on-site interviews as a proactive enforcement tool rather than to meet a "representative sampling" quota. Instead of conducting interviews randomly for the sake of assembling a sample, LCAs are encouraged to target interviews to projects or groups of workers where violations are suspected or alleged. In this way, on-site interviews can be used to support a specific ongoing enforcement action. HUD realizes that this approach may mean that fewer on-site interviews may be conducted randomly; HUD considers targeting a far more efficient and effective means of utilizing on-site interview resources.

LCAS may limit payroll reviews to spot-checks and HUD-11 (Employee Interview Form) comparison

The goal: to detect falsification. HUD believes that serious violations involving underpaid workers and significant wage restitution may be overlooked because the contract administrator is overtasked with HUD-mandated payroll review minutiae. HUD recognizes that it is not possible to conduct payroll reviews in 100% of cases; therefore, it is not possible to identify and correct every discrepancy and underpayment. It is also the case that the violations disclosed behind falsified payrolls are much more egregious (both in terms of affected workers and the amount of underpayment) than violations that appear on the face of the payroll records. Accordingly, HUD has prioritized payroll reviews so that the objective is to detect falsification, and so that enforcement activities will yield the greatest impact. HUD has developed guidance on how to detect falsification through spot-checks and HUD-11 interview comparison. (See Willful Violations and Falsification Applicability in Appendix III-1.)



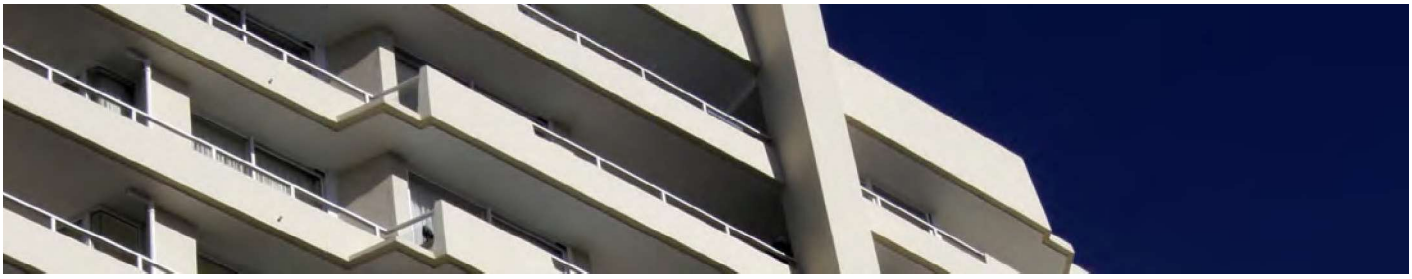
LCAS may limit payroll reviews to spot-checks and HUD-11 (Employee Interview Form) comparison (continued)

Routine payroll review results may be communicated to the prime contractor by telephone and documented with a record in the file. Many times, the types of deficiencies that come to the attention of the contract administrator can be handled more efficiently and just as effectively with good informal communication (e.g., a telephone call, email, etc.) with the employer/prime contractor rather than with formal letters. Examples of the types of issues that could easily be addressed informally—assuming the cooperation of both sides—include a missing payroll report or missing apprenticeship certificates, requests for employee authorizations for deductions, small underpayments that appear on the face of the payroll, and similar matters. With the prime contractor's cooperation, these matters can be disposed of quickly with a telephone call and a brief note to the contract file documenting the call. If the employer/prime contractor does not respond appropriately to this type of communication, it may be necessary to resort to more formal means.

RESOURCE

The Department of Housing and Urban Development (HUD) one stop forms resource page.

www.hud.gov/program_offices/administration/hudclips/forms



FEDERAL LABOR STANDARDS COMPLIANCE CHECKLIST FOR DAVIS-BACON COVERED PROJECTS

RESOURCE

See LCA DBRA Checklist online at the link below:
https://www.hud.gov/program_offices/davis_bacon_and_labor_standards/OLRLibrary

REVIEWING PAYROLLS

See Section 7 in the Contractor Addendum.

REPORTING PAYROLLS

See Section 8 in the Contractor Addendum.

PAYROLL COMPLIANCE REVIEWS AND CORRECTIONS

Compliance reviews

The contract administrator or other inspector may visit the project site and interview some of the workers concerning their employment on the project. DOL may also independently conduct its own reviews (see 10.2.2 in the Contractor Addendum). In addition, the contract administrator will periodically review payrolls and related submissions, comparing the interview information to the payrolls, to ensure that the labor standards requirements have been met. Contractors will be notified by the contract administrator if these reviews find any discrepancies or errors, and will be given instructions about what steps must be taken to correct any problems.

On-site interviews

Every employer (contractor, subcontractor, etc.) must make their employees available for interview at the job site with the contract administrator or other agency representative (or HUD or DOL representative). The interviews are confidential and the employees will be asked about the number of hours they work, the kind of work they perform, and their rate of pay. Every effort will be made to ensure that these interviews cause as little disruption as possible to the ongoing work. The interviewer will record the interview information, usually on a form HUD-11, Record of Employee Interview, and forward the interviews to the contract administrator. Completed HUD-11s must be compared to the corresponding contractor and subcontractor certified payrolls to test and verify the accuracy of the payroll information.

RESOURCE

HUD 11 forms are available online in English and in Spanish in a fillable format via the HUD Forms website (www.hud.gov/program_offices/administration/hudclips/forms) and at the DBLS website (www.hud.gov/program_offices/davis_bacon_and_labor_standards/olrform).

Project payroll reviews

The contract administrator will compare the information on the interview forms to the corresponding payrolls to ensure that the workers are properly listed on the payrolls for the days and hours worked on the job site, work classification, and rate of pay. The contract administrator will also review the payroll submissions to make certain that the payrolls are complete and signed, that employees are paid no less than the wage rate for the work classification shown, that apprentice and trainee certifications are submitted (where needed), that employee or other authorizations for other deductions are submitted (where needed), etc. Contract administrators should be particularly alert for indications of payroll falsification—misinformation on payrolls to conceal underpayments. Falsification on payrolls indicates that a contractor or subcontractor is aware of its obligations, is knowingly underpaying its employees, and is attempting to avoid detection of the violations. See Appendix III-1 for an explanation of willful violations and falsification indicators.

Typical payroll errors and required corrections

Contract administrators must ensure the full correction of all discrepancies disclosed during compliance monitoring conducted by the LCA, HUD, or DOL. This includes the collection of documentation to demonstrate that corrective measures have been successfully completed. They must:

1. **Examine and resolve probable violations and complaints of underpayment.** Contract administrators must explore probable violations—particularly those involving falsification of payrolls and complaints alleging underpayments. In addition to the HUD-11, Record of Employee Interview, HUD has developed a questionnaire form (HUD-4730) and a complaint intake form (HUD-4731) for HUD and LCA use. The forms are available in onscreen fillable formats at the HUD forms website and via the DBLS website;

2. **Refer complex issues and/or falsification cases to HUD or DOL.** Some issues may be more complex than LCAs are able to address. HUD encourages LCAs to consult with the LSS for their area to secure appropriate guidance and support. HUD has decided, in consultation with DOL, that it will refer to DOL cases involving falsification of payrolls or related documents for DOL investigation. HUD strongly suggests that LCAs employ this strategy for cases involving falsification;

3. **Take steps to ensure the full resolution of any monetary liability that has or may be imposed for labor standards reasons.** Contract administrators must take prompt action to ensure that funds will be available to satisfy any labor standards liability that may be imposed. Actions include the withholding of contract payments due to the contractor and requiring funding for an escrow account to guarantee the satisfaction of any restitution and/or liquidated damages assessment that may be pending at contract closeout;

Typical payroll errors and required corrections (continued)

4. **Recommend debarment against repeat violators.** HUD has implemented a zero tolerance policy against contractors who are repeat violators of Davis-Bacon labor standards. The first time an employer is found in violation, the employer is required to pay full restitution to all affected workers and to pay any CWHSSA liquidated damages (for O/T violations) that may be assessed. In addition, the employer must provide written assurance of future compliance. If the employer promptly completes these corrective actions, HUD will not object if the LCA does not recommend debarment against the employer unless there are extenuating circumstances that warrant debarment. If the employer is found in violation again, the LCA must require full correction of any underpayments and payment of CWHSSA liquidated damages assessed. A debarment recommendation made by the LCA against the employer is expected; and

5. **Prepare and submit enforcement reports.** In accordance with DOL regulations (29 CFR Part 5, § 5.7), the contract administrator must prepare and submit to HUD an enforcement report in any case where an employer (contractor or subcontractor) has underpaid its employees by $1,000 or more or where there is reason to believe that the violations are aggravated or willful, and prepare and submit to HUD semi-annual enforcement reports concerning all Davis-Bacon labor standards administration and enforcement activities involving all HUD-assisted programs. Enforcement reports cover wage underpayments by contractors and subcontractors. Note that enforcement reports concern only wage violations associated with projects or contracts subject to the labor standards provisions of the DBRA.

Employer-specific enforcement reports

These enforcement reports are used for three general purposes. First, to report to the Secretary of Labor on Davis-Bacon enforcement actions successfully completed in the field by all federal, state, and local agencies. Second, to refer to the Wage and Hour Administrator investigative findings that are in dispute (e.g., where the employer contests findings of underpayment made against it and requests a hearing to appeal the findings). Third, to make recommendations for debarment and other sanctions and for recommendations concerning liquidated damages computed for CWHSSA O/T violations. (See Labor Relations Letter LR-92-02 for additional guidance concerning employer-based enforcement reports.)

6. **Semi-Annual Enforcement Reports.** HUD is required to furnish to DOL semi¬-annual reports (SARs) concerning the volume of DBRA-covered activities and the compliance and enforcement of DBRA labor standards provisions in HUD programs. The reports are due to DOL by April 30 and October 31 of each calendar year and cover the periods of October 1 through March 31 and April 1 through September 30, respectively. (See DOL regulations at 29 CFR § 5.7(b) and All Agency Memorandum 189.)

Typical payroll errors and required corrections (continued)

To prepare the SAR, HQLS (Headquarters Office Davis-Bacon and Labor Standards) collects data from the LSIS (Labor Standards Information System) and from each RLSO (Regional Labor Standards Officer), and then submits the report to DOL, which accepts electronic submittals of the semi-annual reports in lieu of paper copies at SemiAnnualReport@DOL.gov. HUD collects the reports from its client agencies and compiles a comprehensive report to DOL covering all HUD-assisted Davis-Bacon construction activity. The report may be completed onscreen, saved, and attached to an email message for submission purposes.

RESOURCE

A copy of the Semi Annual Report form (HUD 4710) and instructions (HUD4710i) for LCAs and are available at HUDClips (www.hud.gov/program_offices/administration/hudclips/forms) and at the Davis Bacon and Labor Standards Forms page (www.hud.gov/program_offices/davis_bacon_and_labor_standards/olrform).

MORE INFO

States may report directly to DOL, as the state chooses. PHAs, IHAs, and TDHEs should send data for Davis Bacon projects only; data relating to HUD determined maintenance wage rate projects or projects subject to Tribally determined wage rates (for construction or maintenance work) should not be included.

Common errors

The following paragraphs describe common payroll errors and the corrective steps that must be taken.

Inadequate payroll information

If an alternate payroll format used by an employer (such as some computer payrolls) is inadequate (e.g., does not contain all the necessary information that would be on the optional form WH-347), the employer will be asked to resubmit the payrolls on an acceptable form.

Missing identification numbers

If the first payroll on which an employee appears does not contain the employee's individually identifying number, the employer will be asked to supply the missing information. This information can be reported on the next payroll submitted by the employer if the employer is still working on the project. Otherwise, the employer will be asked to submit a correction certified payroll.

Incomplete payrolls

If the information on the payroll is not complete, for example, if work classifications or rates of pay are missing, the employer will be asked to send a correction certified payroll.

Classifications

If the payrolls show work classifications that do not appear on the wage decision, the employer will be asked to reclassify the employees in accordance with the wage decision, or the employer may request an additional classification and wage rate (see Section 9 in the Contractor Addendum). If reclassification results in underpayment (i.e., the wage rate reported on the payroll is less than the rate required for the new classification), the employer will be asked to pay wage restitution to all affected reclassified employees (see Section 10 in the Contractor Addendum for instructions about wage restitution).

Wage rates

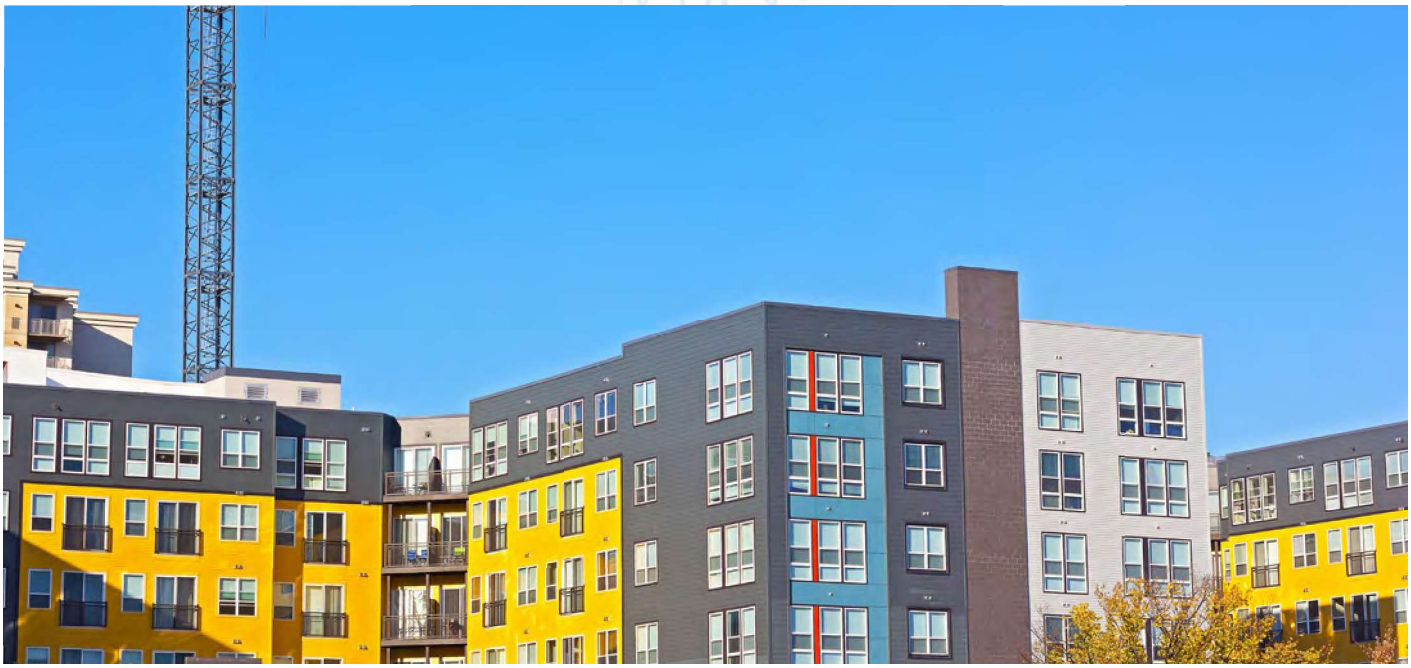
If the wage rates on the payroll are less than the wage rates on the wage decision for the work classifications reported, the employer will be asked to pay wage restitution to all affected employees.

Indications of falsification on payrolls

The greatest threat to construction workers entitled to a statutorily-mandated prevailing wage for their craft is from employers who know what is required, choose not to pay the required prevailing wage rates, and falsify CPRs to conceal the underpayments. Such willful violators see the workers' underpayment as their own gain and engage in deception to increase this gain. In addition, willful violators that successfully escape detection and are not required to pay prevailing wages will continue to bid on Davis-Bacon contracts until their violations are disclosed and administrative sanctions such as debarment are imposed.

Falsification indicators

HUD has prepared a list and explanation of four common falsification indicators that are detectable during payroll "spot-checks."



Information reported on payrolls that indicate falsification suggests willful, much more serious violations in terms of the amount of back wages that may be due and the number of employees affected.

Such cases most often warrant investigation, which can include on-site interviews, mailing questionnaires to employees, taking written statements or complaints, and other methods to gather and assess the facts of the case. See Appendix III-1 for an explanation of willful violations and falsification indicators.

Apprentices and trainees

If a copy of the employee's registration or the approved program ratio and wage schedule are not submitted with the first payroll on which an apprentice or trainee appears, the employer will be asked to submit a copy of each apprentice's or trainee's registration and/or the approved program ratio and wage schedule. If the ratio of apprentices or trainees to journeymen on the payroll is greater than the ratio in the approved program, the employer will be asked to pay wage restitution to any excess apprentices or trainees. Also, any apprentice or trainee that is not registered in an approved program must receive the journeyman's wage rate for the classification of work they performed.

Overtime

If the employees did not receive at least time and one-half for any O/T hours worked on the project, the following will occur:

1. If the project is subject to CWHSSA O/T requirements, the employer will be asked to pay wage restitution for all O/T hours worked on the project.

The employer may also be liable to the United States for liquidated damages computed at $26 per day per violation, and indexed to increase annually. Or,

2. If the project is not subject to CWHSSA, the employer will be notified of the possible FLSA O/T violations.

Also, the contract administrator may refer the matter to DOL for further review.

Computations

If the payroll computations (hours worked times rate of pay) or extensions (deductions, net pay) show frequent errors, the employer will be asked to take greater care. Wage restitution may be required if underpayments resulted from the errors.

Deductions

If there are any "Other" deductions that are not identified, or if employee authorization isn't provided, or if there is any unusual (very high, or large number) deduction activity, the employer will be asked to identify the deductions, provide employee authorization, or explain unusual deductions, as necessary.

HUD does not enforce or attempt to provide advice on employer obligations to make deductions from employee earnings for taxes or Social Security. However, HUD may refer to the IRS or other responsible agency copies of CPRs that show wages paid in gross amounts (i.e., without tax deduction) for its review and appropriate action.

Fringe benefits

If the wage decision contains fringe benefits but the payroll does not indicate how fringe benefits were paid (neither 4(a) nor 4(b) is marked on the Statement of Compliance), the employer may be asked to submit correction certified payrolls and will be required to pay wage restitution if underpayments occurred.

However, if the basic hourly rates for the employees are at least as much as the total wage rate on the wage decision (basic hourly rate plus the fringe benefit rate), no correction is necessary.

Signature

If the payroll Statement of Compliance is not signed or is missing, the employer will be asked to submit a signed Statement of Compliance for each payroll affected. If the Statement of Compliance is signed by a person who is not a principal of the firm and that person has not been authorized by principal to sign, the employer will be asked to provide an authorization or to resubmit the Statement(s) of Compliance bearing the signature of a principal or other authorized signatory.

On-site interview comparisons

If the comparison of on-site interviews to the payrolls indicates any discrepancies (e.g., the employee does not appear on the payroll for the date of the interview), the employer will be asked to submit a correction CPR.

Correction certified payroll

Any and all changes to data on a submitted payroll report must be reported on a certified correction payroll. In no case will a payroll report be returned to the prime contractor or employer for revision.

Restitution for underpayment of wages

Where underpayments of wages have occurred, the employer will be required to pay wage restitution to the affected employees. Wage restitution must be paid promptly in the full amounts due, less permissible and authorized deductions. All wages paid to laborers and mechanics for work performed on the project, including wage restitution, must be reported on a CPR. If a violation of labor standards requirements results in an underpayment of wages to employees, the LCA should notify the prime contractor to either make wage restitution or direct its subcontractor to do so. Where restitution amounts are in excess of $10 per worker, the employer must attest to wage restitution paid on a correction certified payroll.

Notification to the Employer/Prime contractor

The contract administrator will notify the employer and/or prime contractor in writing of any underpayments that are found during payroll or other reviews. The contract administrator will describe the underpayments and provide instructions for computing and documenting the restitution to be paid. The employer/prime contractor is allowed 30 days to correct the underpayments. Note that the prime contractor is responsible to the contract administrator for ensuring that restitution is paid. If the employer is a subcontractor, the subcontractor will usually make the computations and restitution payments and furnish the required documentation through the prime contractor.

Notification to the Employer/Prime contractor (continued)

MORE INFO

The contract administrator may communicate directly with a subcontractor when the underpayments are plainly evident and the subcontractor is cooperative. It is best to work with the prime contractor when the issues are complex, when there are significant underpayments, and/or the subcontractor is not co operative. In all cases, the subcontractor must ensure that the prime contractor receives a copy of the required documentation.

Computing wage restitution

Wage restitution is simply the difference between the wage rate paid to each affected employee and the wage rate required on the wage decision for all hours worked where underpayments occurred. The difference in the wage rates is called the adjustment rate. The adjustment rate times the number of hours involved equals the gross amount of restitution due. Alternatively, wage restitution may be computed by calculating the total amount of Davis-Bacon wages earned and subtracting the total amount of wages paid. The difference is the amount of back wages due.

Total hours worked times (x) adjustment rate (DB rate – rate paid) = wage restitution due; or

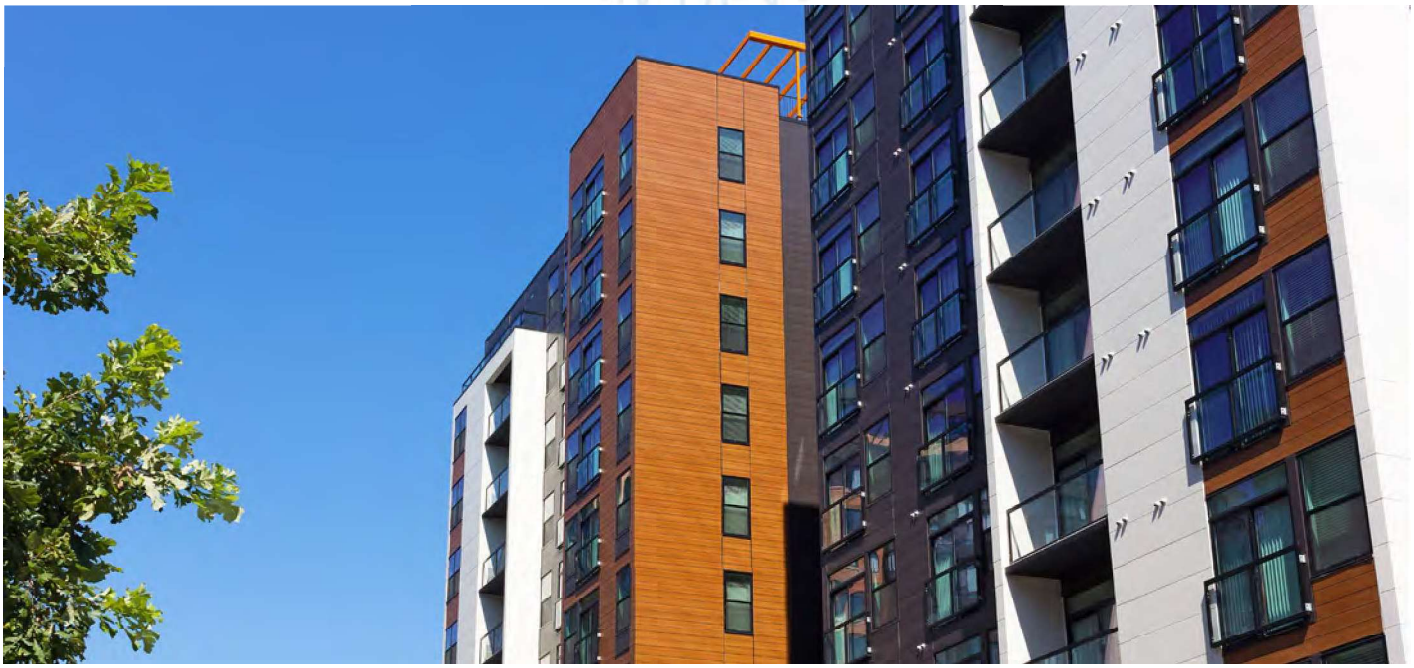
Total wages earned minus (-) total wages paid = wage restitution due.

Correction certified payrolls

The employer will be required to report the restitution paid on a correction certified payroll. The correction payroll will reflect the period for which restitution is due (e.g., Payrolls #1 through #6, or a beginning date and ending date). The correction payroll will list each employee to whom restitution is due and their work classification, the total number of work hours involved (daily hours are usually not applicable for wage restitution), the adjustment wage rate (the difference between the required wage rate and the wage rate paid), the gross amount of restitution due, deductions, and the net amount actually paid. A properly signed Statement of Compliance must accompany the correction payroll. HUD no longer requires the signature of the employee on the correction payroll to evidence employee receipt of restitution payment. In addition, except in the most extraordinary cases, HUD no longer requires employers to submit copies of restitution checks (certified, cashier's, canceled, or other) or employee-signed receipts or waivers.

MORE INFO

In the course of basic enforcement and corrections, the em ployer need only submit a correction CPR to evidence wage restitution paid. Other documentation such as copies of checks, copies of cancelled checks, receipts signed by the employees, employee signatures on the correction CPR, etc., is not required.



Review of correction CPR

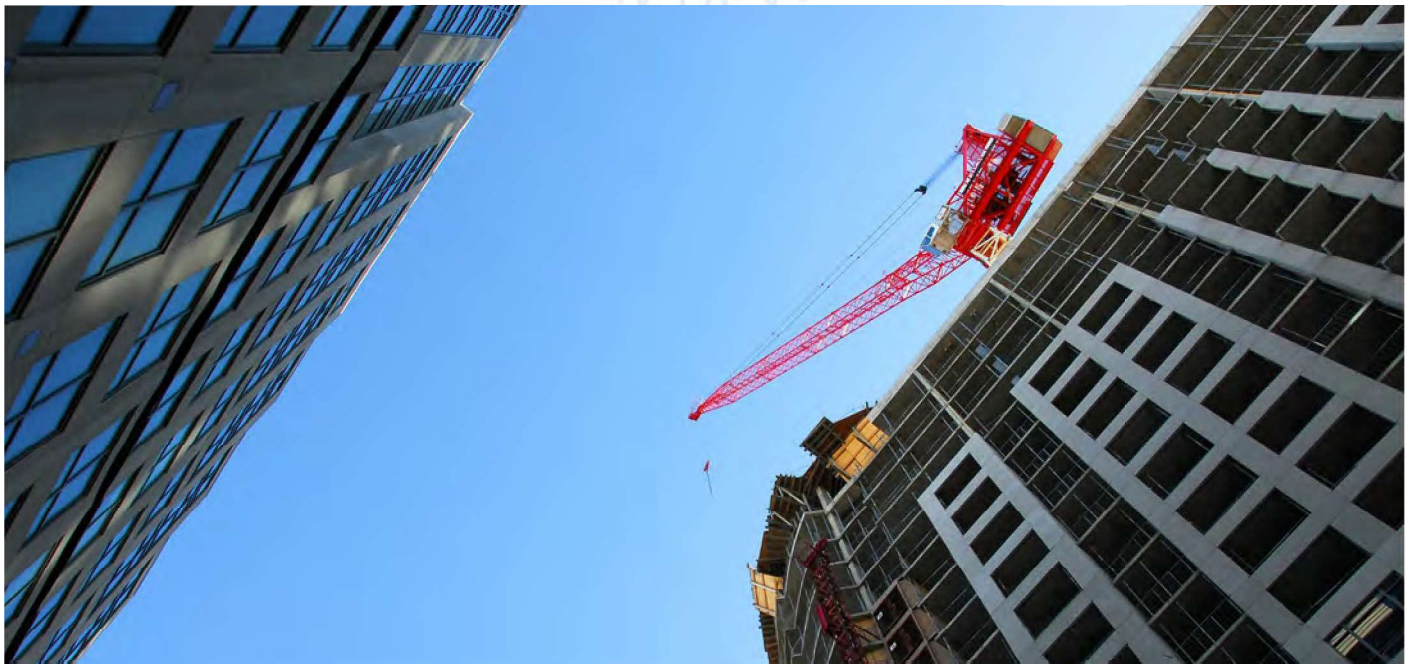
The contract administrator will review the correction certified payroll to ensure that full restitution was paid. The prime contractor shall be notified in writing of any discrepancies and will be required to make additional payments, if needed, documented on a correction certified payroll within 30 days.

Withholding payments due to the contractor

If wage violations are not corrected within 30 days after notification to the prime contractor, the LCA may cause the withholding of payments due to the contractor in the amount needed to ensure the full payment of restitution and, if applicable, liquidated damages computed for CWHSSA O/T violations. Only the amounts necessary to meet the potential back wage and CWHSSA liquidated damages liabilities should be withheld.

Unfound workers

Sometimes, wage restitution cannot be paid to an affected employee because, for example, the employee has moved and cannot be located. After wage restitution has been paid to all the workers who could be located, the employer must submit a list of any workers who could not be found and paid (i.e., unfound workers), providing their name, Social Security number, last known address, and the gross amount due. In such cases, at the end of the project the prime contractor will be required to place in a deposit or labor standards escrow account an amount equal to the total gross amount of restitution that could not be paid because the employee(s) could not be located. The contract administrator will continue attempts to locate the unfound workers for three years after the completion of the project. After three years, any amount remaining in the account for unfound workers will be credited and/or forwarded by the contract administrator to HUD. Contact the HUD LSS for your area if you encounter this situation.



ADDITIONAL WORK CLASSIFICATION AND WAGE RATES

See Section 9 in the Contractor Addendum.

SANCTIONS AND RESTITUTION

See Section 9 in the Contractor Addendum.

APPENDIX

- Appendix I-1 Reorganization Plan No. 14 of 1950
- Appendix I-2 Delegations of Authority
- Appendix I-3 Labor Standards Core Work Activities
- Appendix II-1 HUD Davis-Bacon Related Acts
- Appendix II-2 Davis-Bacon Act Copeland Anti-Kickback Act
- Appendix II-3 Contract Work Hours and Safety Standards Act
- Appendix II-4 Federal Labor Standards Coverage in Major HUD Programs
- Appendix II-5 Factors of Labor Standards Applicability
- Appendix III-1 HUD's Willful Violations and Falsification Applicability
- Appendix III-2 Sample Deposit Schedule
- Appendix III-3 Sample Tax Withholding Notice
- Appendix III-4 Unfound Worker Schedule
- Appendix III-5 Refund of Deposit Memorandum Template
- Appendix IV-1 Acronyms and Symbols

DAVIS-BACON AND LABOR STANDARDS

CONTRACTOR GUIDE ADDENDUM

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INTRODUCTION

This Guide has been prepared for you as a contractor performing work on construction projects that are assisted by the Department of Housing and Urban Development and subject to Davis-Bacon prevailing wage requirements. This Guide does not address contractor requirements involved in direct Federal contracting where HUD or another Federal agency enters into a procurement contract. In this latter case, the Federal Acquisition Regulations (FAR) are applicable. While the guidance contained in this Guide is generally applicable to any Davis-Bacon covered project, specific questions pertaining to direct Federal contracts should be addressed to the Contracting Officer who signed the contract for the Federal agency.

Our objective here is to provide you with a guide that is simple and non-bureaucratic yet comprehensive, and will help you better understand and comply with Davis-Bacon labor standards. HUD's Office of Davis Bacon and Labor Standards worked closely with the Department of Labor's Wage and Hour Division to make sure that the labor standards provisions in your contract and the specifics of complying with them represent the latest information. It is the Department of Labor that has general administrative oversight of all Federal contracting agencies, such as HUD, which administer the day-to-day responsibilities of enforcing Davis-Bacon provisions in construction contracts that they either fund or assist in funding.

This Guide contains six main chapters. The first chapter includes the laws and regulations associated with Federal labor standards administration and enforcement. The second chapter lists the responsibilities of contractors and of state, tribal, and local contracting agencies that administer HUD programs. The third chapter lists wage basics, including wage decisions, wage classifications, and wage rates, to provide background for the rest of the Guide. The fourth chapter discusses reviewing and reporting payrolls. The fifth chapter delves into additional work classifications and wage rates. The sixth and final chapter discusses sanctions and restitution. For further background, the DBLS Agency Guide may be used as a reference.

Finally, not all HUD construction projects are covered by Davis-Bacon wage rates. For the purpose of this Guide, we are assuming that a determination has already been made that Davis-Bacon wage rates are applicable. Should you wish assistance in determining whether Davis-Bacon wage rates apply to a particular project or if you need other related technical assistance, please consult with the HUD Labor Standards Field staff for your area.

RESOURCE

Visit the Office of Davis Bacon and Labor Standards online: www.hud.gov/program_offices/davis_bacon_and_labor_standards

BASIC DBA DEFINITIONS

See Section 3 in the Agency Guide.

LAWS AND REGULATIONS

The Davis-Bacon Act (DBA)

The Davis-Bacon Act (DBA) requires the payment of prevailing wage rates (determined by the U.S. Department of Labor) to all laborers and mechanics on Federal government and District of Columbia construction projects in excess of $2,000. Construction includes alteration and/or repair, including painting and decorating, of public buildings or public works. Most HUD construction work is not covered by the DBA itself since HUD seldom contracts directly for construction services. Most often, if DB applies to a HUD project is it because of a labor provision contained in one of HUD's "Related Acts" (see 5.9 in the Agency Guide). The Related Acts are often referred to as the Davis-Bacon and Related Acts or DBRA.

The Contract Work Hours and Safety Standards Act (CWHSSA)

CWHSSA requires time and one-half pay for overtime (OT) hours (over 40 in any workweek) worked on a covered project. The CWHSSA applies to both direct federal contracts and to federally-assisted contracts where those contracts require or involve the employment of laborers and mechanics and where federal wage standards (e.g., Davis-Bacon or HUD-determined prevailing wage rates) are applicable. CWHSSA provisions apply to all laborers and mechanics, including watchmen and guards, employed by any contractor or subcontractor. CWHSSA also applies to maintenance laborers and mechanics employed by contractors or subcontractors engaged in the operation of Public Housing Agencies (PHA), Tribally Designated Housing Entities (TDHE), and Indian Housing Agencies (IHA) developments.

Exemptions:

CWHSSA O/T provisions do not apply where the federal assistance is only in the nature of a loan guarantee or insurance.

CWHSSA O/T provisions do not apply to prime contracts of $100,000 or less.

The Copeland Act (Anti-Kickback Act)

The Copeland Act makes it a Federal crime for anyone to require any laborer or mechanic (employed on a Federal or Federally-assisted project) to kickback, (i.e., give up or pay back) any part of their wages. The Copeland Act requires every employer to submit weekly certified payroll reports, and regulates permissible payroll deductions.

The Fair Labor Standards Act (FLSA)

The FLSA governs matters such as federal minimum wage rates and O/T. These standards are generally applicable to any labor performed and may be pre-empted by other (often more stringent) federal standards such as the DBRA prevailing wage requirements and CWHSSA O/T provisions. The authority to administer and enforce FLSA provisions resides solely with DOL.

Davis-Bacon Regulations

DOL has published rules and instructions concerning Davis-Bacon and other labor laws in the Code of Federal Regulations (CFR). These regulations can be found in Title 29 CFR Parts 1, 3, 5, 6, and 7. Part 1 explains how DOL establishes and publishes DBA wage determinations (also referred to as wage decisions) and provides instructions on how to use the determinations. Part 3 describes Copeland Act requirements for payroll deductions and the submission of weekly CPRs. Part 5 covers the labor standards provisions that are in contracts relating to Davis-Bacon Act wage rates and the responsibilities of contractors and contracting agencies to administer and enforce the provisions. Part 6 provides for administrative proceedings enforcing Federal labor standards on construction and service contracts. Finally, Part 7 sets parameters for practice before the Administrative Review Board. These regulations are used as the basis for administering and enforcing the laws.

DOL Regulations are available online: www.ecfr.gov/current/title-29

Construction Contract Provisions and Labor Standards Administration

Labor standards administration involves the activities that take place primarily before construction begins. Administration sets the stage for the compliance activities that occur during the construction phase. The first and sometimes most difficult step is determining whether and to what extent Davis-Bacon wage standards apply to a particular contract or project. The Factors of Labor Standards Applicability (see Appendix II-6) should be helpful. Most HUD-assisted construction work is covered by Davis-Bacon, but there are some exceptions. The best and safest approach is to first assume that Davis-Bacon requirements will be applicable whenever the contract/project involves construction work valued in excess of $2,000, then look more closely to see if there is any reason for non-coverage. Each contract subject to Davis-Bacon labor standards requirements must contain labor standards clauses and a Davis-Bacon wage decision. These documents are normally wound into the contract specifications.

The labor standards clauses

The contract for construction is the vehicle to ensure contractor compliance and Davis-Bacon wage enforcement. Therefore, the bid specifications and/or the contract for each project subject to Davis-Bacon wage rates must contain both a Davis-Bacon wage decision and labor standards clauses. The labor standards clauses describe the responsibilities of the contractor concerning Davis-Bacon wages and obligate the contractor to comply with the Davis-Bacon wage and reporting requirements and with the O/T provisions of the CWHSSA (applicable only when the prime contract is valued at over $100,000). The labor standards clauses also provide for remedies in the event of violations, including the withholding of payments due to the contractor to ensure the payment of wages or liquidated damages that may be found due, and sanctions should violations occur. These contract clauses enable the contract administrator to enforce the Federal labor standards applicable to the project. HUD has standard forms that contain contract clauses. For example, the HUD-92554M, Supplementary Conditions Of The Contract for Construction, which is issued primarily for FHA (Federal Housing Administration) multifamily housing and other construction projects administered by HUD; the HUD-4010, Federal Labor Standards Provisions, which is used for CDBG (Community Development and Block Grant) and HOME (HOME Investment Partnerships Program) projects; and the HUD-5370, General Conditions for Construction Contracts (construction contracts >$150,000) or the HUD-5370-EZ, General Contract Conditions for Small Construction/Development Contracts (construction contracts >$2,000 but ≤$150,000) which are used for Public and Indian Housing projects. These should be wound into the contract specifications or incorporated by specific reference in the bid/contract documents (see Labor Relations Letter 96-03).

Davis-Bacon Wage Decisions

The term "wage decision" includes the original decision and any subsequent decisions that modify, supersede, correct, or otherwise change the provisions of the original decision. The term "wage decision" is used within this Guide to mean the Davis-Bacon wage decision. The terms "wage decision" and "wage determination" are used interchangeably. A wage decision is a schedule of construction work classifications, wage rates, and fringe benefits that represent the minimum rates that must be paid to workers employed in those classifications. Wage decisions are established for defined geographic areas, usually by county or group of counties, and four general characters of construction work.

RESOURCE

The Department of Housing and Urban Development (HUD) one stop forms resource page.
www.hud.gov/program_offices/administration/hudclips/forms

RESOURCE

All current Davis Bacon wage decisions can be accessed online at no cost at www.sam.gov

CONTRACTOR RESPONSIBILITIES

The principal contractor is responsible for the full compliance of all employers (the contractor, subcontractors, and any lower-tier subcontractors) with the labor standards provisions applicable to the project. Because of the contractual relationship between a prime contractor and their subcontractors, subcontractors generally should communicate with the contract administrator only through the prime contractor. (See Contract Administrator Responsibilities, below.)

CONTRACT ADMINISTRATOR RESPONSIBILITIES

The contract administrator is responsible for the proper administration and enforcement of the Federal labor standards provisions on contracts covered by Davis-Bacon requirements. This term is used to represent the person (or persons) who will provide labor standards advice and support to contractors and other project principals (e.g., owner, sponsor, architect), including providing the proper Davis-Bacon wage decision (see 6.1, The Wage Decision) and ensuring that the wage decision and contract clauses are incorporated into the contract for construction. The contract administrator also monitors labor standards compliance (see Section 12, Payroll Compliance Reviews and Corrections, in the Agency Guide) by conducting interviews with construction workers at the job site and reviewing payroll reports, and oversees any enforcement actions that may be required.

The contract administrator could be an employee or agent of HUD, or of a city or county or public housing agency. For HUD projects administered directly by HUD staff, usually FHA-insured multifamily projects, the contract administrator will be the HUD Labor Standards field staff. But many HUD-assisted projects are administered by local contracting agencies such as PHAs, TDHEs, and States, cities and counties under HUD's CDBG and HOME programs.

In these cases, the contract administrator will likely be local agency staff. In either case, the guidance for contractors remains essentially the same.

DOL also has a role in monitoring Davis-Bacon administration and enforcement. In addition, DOL has independent authority to conduct investigations. A DOL investigator or other DOL representative may visit Davis-Bacon construction sites to interview construction workers or review payroll information.

RESOURCE

Program technical guidance

For interpretations of program requirements or handbooks and instructions on the use of forms:

Housing Programs - See our Contact List for help.

WAGE BASICS

The Wage Decision

Davis-Bacon labor standards stipulate the wage payment requirements for skilled workers, operators, truck drivers, and laborers—for example: carpenters, electricians, plumbers, roofers, rollers, screeds, bulldozers, water wagons, dump trucks, and other construction work classifications that may be needed for the project. The Davis-Bacon wage decision that applies to the project contains a schedule of work classifications and wage rates that must be followed.

Remember, the wage decision is contained in the contract specifications along with the labor standards clauses. See 5.12 in the Agency Guide.

The work classifications and wage rates

A Davis-Bacon wage decision is simply a listing of different work classifications and the minimum wage rates that must be paid to anyone performing work in those classifications.

You'll want to make sure that the work classifications you need are contained in the wage decision, and make certain that you know exactly what wage rate(s) you will need to pay. Some wage decisions cover several counties and/or types of construction work (e.g., residential and commercial work) and can be lengthy and difficult to read. The contract administrator (HUD Labor Standards field staff or local agency staff) is available to assist with any trouble reading the wage decision or finding the applicable work classification(s).

To make reading lengthy wage decisions easier, a contract administrator may prepare a Project Wage Sheet (HUD-4720). This sheet is a one-page transcript that will show only the classifications and wage rates for a project. A blank copy of a Project Wage Rate Sheet is provided in the Appendix.

RESOURCE

A fillable version of this form is available online at HUDClips www.hud.gov/program_offices/administration/hudclips/forms Contact the contract administrator monitoring the project for assistance with a Project Wage Rate.

Posting the wage decision, Davis-Bacon poster, and Additional Classifications wages

The prime contractor is responsible for posting a copy of the wage decision (or the Project Wage Rate Sheet), a copy of the DOL Davis-Bacon poster titled Employee Rights Under the Davis-Bacon Act (Form WH-1321), and Additional Classifications wages at the job site in a place that is easily accessible to all the construction workers employed on the project and where the wage decision and poster will not be destroyed by wind, rain, etc. The purpose of this posting is to provide information to the construction laborers and mechanics working on the project about their entitlement to the prevailing wage for their trade, and to advise them whom to contact (the contract administrator) if they have any questions or want to file a complaint.

RESOURCE

The Employee Rights Under the Davis Bacon Act poster replac es the Notice To All Employees. The new poster is available in English and Spanish online at:

www.hud.gov/program_offices/davis_bacon_and_labor_standards/olrmk13.

REVIEWING PAYROLLS

Certified Payroll Reports (CPRs)

To demonstrate compliance with labor standards requirements, each employer shall prepare, certify, and submit payroll reports for each week to the sponsor, applicant, or owner for any contract work that is performed. See 29 CFR § 5.5(a)(3)(ii) for information on CPRs.

CPR format

Employers on an FHA project are required to use the HUD-authorized Electronic Payroll System (EPS) to submit CPR reports. If an approved electronic payroll reporting system is not being used by the LCA,, the employer must ensure that all information from DOL Payroll Form WH-347 is included and that the LSS can reasonably interpret it. Form WH-347 is available online at www.dol.gov/whd/forms/wh347.pdf.

Submission requirements

Each employer shall submit payroll reports beginning with the first week such employer performs work on the site of the work. Employers shall submit reports promptly following the close of each such pay week.

"No Work" payrolls

Employers are not required to submit reports for weeks during which no work was performed at the site of work, provided that the payroll reports are numbered sequentially or that the employer has provided written notice that its work on the project has been suspended.

Weekly payroll certification

Each weekly payroll submitted shall be accompanied by a "Statement of Compliance" that bears the original signature of the owner, executive/corporate officer, or a designee authorized by the owner or officer. The signature must be in ink; pencil is not acceptable. Signature stamps, photocopies, and facsimiles are not acceptable. The employer may utilize the reverse side of the DOL Payroll Form WH-347 as its Statement of Compliance or another document that contains the same language prescribed on the reverse of the WH-347.

False Submissions

The falsification of any of the above certifications may subject the employer to civil or criminal prosecution under § 1001 of Title 18 and § 231 of Title 31 of the United States Code (USC).

Payroll Review and Submission

The prime contractor should review each subcontractor's payroll reports for compliance prior to submitting the reports to the contract administrator. Remember, the prime contractor is responsible for the full compliance of all subcontractors on the contract and will be held accountable for any wage restitution that may be found due to any laborer or mechanic that is underpaid and for any liquidated damages that may be assessed for O/T violations. All the payroll reports for any project must be submitted to the contract administrator through the prime contractor.

An alert prime contractor that reviews subcontractor payroll submissions can detect any misunderstandings early, prevent costly underpayments, and protect itself from financial loss should underpayments occur.

Payroll Retention

Every contractor (including every subcontractor) must keep a complete set of their own payrolls and other basic records—such as employee addresses and full SSNs, time cards, tax records, evidence of fringe benefit payments—for a Davis-Bacon project for at least three years after the project is completed. The prime contractor must keep a complete set of all the payrolls for every contractor (including subcontractors) for at least three years after completion of the project.

Payroll Inspection

In addition to submitting payrolls to the contract administrator, every contractor (including subcontractors) must make their own copy of the payrolls and other basic records available for review or copying to any authorized representative from HUD or DOL.

REPORTING PAYROLLS

Completing a Payroll Report

Each employer shall maintain payroll records with respect to their own workforce employed at the site of the work. The prime contractor shall maintain such records relative to all laborers and mechanics working at the site of the work during the course of the construction work for at least three years following the completion of the work. Such records shall contain:

Project and contractor/subcontractor information

Each payroll must identify the contractor or subcontractor's name and address, the project name and number, and the week ending date. Week dates must be indicated in the spaces provided. Numbering payrolls is optional but strongly recommended.

Employee information

The name and an individually identifying 4-digit number for each laborer and mechanic. Employers must always maintain each employee's address and full Social Security number (SSN) during the construction of the project and for no less than three years following completion. This information must be made available to the prime contractor, HUD, and/or the LCA upon request.

Employers (prime contractors and subcontractors) must maintain the current address and full SSN for each employee and must provide this information upon request to the contracting agency or other authorized representative responsible for Federal labor standards compliance monitoring. Prime contractors may require a subcontractor to provide this information for the prime contractor's records. DOL has modified form WH-347, Payroll, to accommodate these reporting requirements.

Work classification

Each employee must be classified in accordance with the wage decision based on the type of work they perform.

Apprentices or trainees

The first payroll on which any apprentice or trainee appears must be accompanied by a copy of that apprentice's or trainee's registration in a registered or approved program. A copy of the portions of the registered or approved program pertaining to the wage rates and ratios shall also accompany the first payroll on which the first apprentice or trainee appears.

Split classifications

For an employee that worked in a split classification, make a separate entry for each classification of work performed, distributing the hours of work to each classification accordingly, and reflecting the rate of pay and gross earnings for each classification. Deductions and net pay may be based upon the total gross amount earned for all classifications.

Hours worked

The payroll should show only the regular and O/T hours worked on one particular project. The employer must show both the daily and total weekly hours for each employee. If an employee performs work at job sites other than the project for which the payroll is prepared, those "other job" hours should not be reported on the payroll. In these cases, employers should list the employee's name, classification, hours for this project only, the rate of pay and gross earnings for this project, and the gross earned for all projects. Deductions and net pay may be based upon the employee's total earnings (for all projects) for the week.

Rate of pay

Employers must show the basic hourly rate of pay for each employee for one particular project. If the wage decision includes a fringe benefit and the employer does not participate in approved fringe benefit programs, the employer must add the fringe benefit rate to the basic hourly rate of pay, and must list the O/T rate if O/T hours were worked.

Piece-work

For any piece-work employees, the employer must compute an effective hourly rate for each employee each week based upon the employee's piece-work earnings for that week. To compute the effective hourly rate, divide the piece-work earnings by the total number of hours worked, including consideration for any O/T hours.

The effective hourly rate must be reflected on the certified payroll. This hourly rate may be no less than the wage rate (including fringe benefits, if any) on the wage decision for the classification of work performed. It does not matter that the effective hourly rate changes from week to week, only that the rate is no less than the rate on the wage decision for the classification of work performed.

Remember, the O/T rate is computed at one and one-half times the basic rate of pay plus any fringe benefits. For example, if the wage decision requires $10/hour basic plus $5/hour fringe benefits, the O/T rate would be: ($10 x 1.5) + $5 = $20/hour.

Gross wages earned

Show the gross amount of wages earned for work performed on a particular project. Note: Employees with work hours and earnings on other projects may show gross wages for a particular project over gross earnings from all projects (e.g., $425.40/$764.85) and base deductions and net pay on the "all projects" earnings.

Deductions

Show the amounts of any deductions from the gross earnings. "Other" deductions should be identified (e.g., Savings Account or Loan Repayment). Any voluntary deduction (i.e., not required by law or by an order of a proper authority) must be authorized in writing by the employee or provided for in a collective bargaining (union) agreement. A short note signed by the employee is all that is needed and should accompany the first payroll on which the other deduction appears. The note needs to show the type, amount, and frequency of the deduction. A new deduction authorization is required when any of the aforementioned items change.

MORE INFO

Only one employee authorization is needed for recurring (e.g., weekly) "other" deductions. Written employee authorization is not required for income tax and Social Security deductions.

Net pay

Show the net amount of wages paid.

Statement of Compliance

The Statement of Compliance is the certification. It is located on the reverse side of a standard payroll form (WH-347). Employers must be sure to complete the identifying information at the top, particularly if attaching the Statement of Compliance to an alternate payroll form such as a computer payroll. Also, the employer must check either 4(a) or 4(b) if the wage decision contains a fringe benefit. Checking 4(a) indicates that the employer is paying required fringe benefits to approved plans or programs; and 4(b) indicates that the employer is paying any required fringe benefit amounts directly to the employee by adding the fringe benefit rate to the basic hourly rate of pay. If the employer is paying a portion of the required fringe benefit to programs and the balance directly to the employee, the employer must explain those differences in box 4(c).

Signature

For paper payrolls submitted, the payroll is signed with an original signature in ink. The payroll must be signed by a principal of the firm (owner or officer such as the president, treasurer, or payroll administrator) or by an authorized agent (a person authorized by a principal in writing to sign the payroll reports). Signature authorization (for persons other than a principal) should be submitted with the first payroll signed by such an agent. For paper payrolls, signatures in pencil, signature stamps, Xerox copies, PDFs, and other facsimiles are not acceptable.

MORE INFO

Only one Statement of Compliance is required for each employer's weekly payroll no matter how many pages are needed to report the employee data.

ADDITIONAL WORK CLASSIFICATION AND WAGE RATES

After contract award, if it is determined that additional work classifications are required because the wage decision lacks all the necessary classifications and wage rates, the prime contractor and, if applicable, its subcontractors employing workers in such classifications shall request an additional work classification and propose a wage rate and fringe benefits for such classification on form SF-1444, Request for Authorization of Additional Classification and Rate. The contractor or subcontractor shall make its request for a final decision through the LSS or LCA, as appropriate, to DOL at whd-cbaconformance_incoming@dol.gov. The LSS/LCA shall assist the employer in preparing the request and, if necessary, provide guidance on the policies and procedures involved.

Note: Additional work classifications and wage rates may be requested only after the effective wage decision "lock-in" date. (See DOL Regulations at 29 CFR Part 5 § 5.5(a)(1)(ii).)

Additional Work Classification and Wage Rate Parameters

Signature

Additional work classifications must be signed by DBLS for FHA-insured projects managed by HUD and signed by the LCA contracting officer for projects managed by LCAs, then forwarded to DOL with the applicable wage decision where:

The requested work classification is used in the area of the project by the construction industry;

The work that will be performed by the requested work classification is not performed by a work classification that is already contained within the applicable wage decision;

The proposed wage rate for the requested work classification bears a reasonable relationship to the wage rates on the wage decision; and

The workers that will be employed in the requested work classification (if it is known who the workers are or will be) or the workers' representatives agree with the proposed wage rate.

General guide

The wage rate and fringe benefits proposed for any classification must be in accordance with the guidance available in All Agency Memorandum 213. The proposed wage rate and fringe benefits should bear a reasonable relationship to the entirety of the rates within the relevant category. There are four basic categories: skilled crafts, laborers, truck drivers, and power equipment operators. Additional classifications proposed for power equipment operators must specify the type(s) of power equipment involved.

Making the Request

Although a request for additional work classification and wage rate may be prompted following an LSS/LCA review, the proposal must originate with the prime contractor/employer that will utilize the work classification. The prime contractor/employer must submit the request in writing. A basic request must identify the contract/project involved, the work classification requested, and the wage rate, including any bona fide fringe benefits proposed. In some cases, it may be necessary for the prime contractor/employer to describe the work that the requested work classification would perform. The prime contractor/employer should use form SF-1444, Request for Authorization of Additional Classification and Rate, to submit the request.

LSS/LCA Review of Request

The LSS/LCA will review the prime contractor/employer's request to determine if it satisfies the approval criteria at 5.12.1.9.2. The LSS/LCA will contact the prime contractor/employer if clarification or additional information is needed to complete the review.

Signing the request, reporting to DOL

If the LSS/LCA review finds that the requested work classifications and wage rate/fringe benefits meet the criteria at 5.12.1.9.2, the LSS/LCA submits the completed SF-1444, related documentation, and the applicable wage decision to the DOL National Office for final decision using DOL's dedicated email address:

whd-cbaconformance_incoming@dol.gov.

Disagreement with the request; referring for DOL decision

If the LSS/LCA review finds that the requested work classification and wage rate/fringe benefits fails to meet the approval criteria or if the parties do not agree on the proper classification or wage rate/fringe benefits for the work described, the LSS/LCA shall prepare an SF-1444 and a written report explaining the results of the review and any issues in dispute among the parties, and shall forward these along with a copy of the applicable wage decision to the DOL National Office for its decision using the same dedicated DOL email address.

DOL decision

DOL regulations permit 30 days for DOL to respond to the SF-1444. DOL will notify the LSS/LCA in writing of its decision.

DOL approval

When DOL approves the requested additional work classification and wage rate/fringe benefits, the LSS/LCA shall provide a copy of the DOL notice of approval to the prime contractor/employer with instructions that the additional work classification and wage rate/fringe benefits must be posted on the job site with the wage decision.

DOL disapproval

When DOL disapproves the requested work classification and wage rate/fringe benefits, DOL will notify the LSS/LCA in writing of the reasons why the request cannot be approved. DOL may also indicate what work classifications/wage rate/fringe benefits could be approved for the work involved if a modified request is submitted.

Notification to the prime contractor/employer

The LSS/LCA will notify the prime contractor/employer in writing of the results of the LSS/LCA review and/or DOL decision and provide a copy of the DOL notice.

Requests for DOL reconsideration

The LSS/LCA, the prime contractor/employer, or other interested parties may request reconsideration of the DOL decision on a requested additional work classification and wage rate/fringe benefits. Such requests must be made in writing accompanied by a full statement of the interested party's views and any supporting wage data or other pertinent information.

SANCTIONS AND RESTITUTION

Introduction

Even in the best of circumstances, things can go wrong. In a Davis-Bacon context, "things going wrong" usually means there's a difference of opinion or a dispute about whether and to what extent underpayments have occurred. These disputes are usually between the contract administrator and one or more employers (the prime contractor and/or a subcontractor). The dispute may involve something simple such as an additional classification request that is pending before DOL, or something as significant as investigative findings following a complaint of underpayment. This chapter discusses some of the things you might expect, and what you can do to make your views known and to lessen any delays in resolving the problem or issue.

Administrative Review on Labor Standards Disputes

The labor standards clauses in the contract and DOL regulations provide for administrative review of issues where there is a difference of views between the contract administrator and any employer. The most common circumstances include:

Additional classifications and wage rates

Additional classification and wage rate requests are sometimes denied by DOL. An employer that is dissatisfied with the denial can request reconsideration by the DOL Wage and Hour Administrator. The employer may continue to pay the wage rate, as requested, until a final decision is rendered on the matter. When the final decision is known, the employer will be required to pay any additional wages that may be necessary to satisfy the wage rate that is established.

Reconsideration

DOL normally identifies the reasons for denial in its response to the request. Any interested person (e.g., the contract administrator, employer, or representatives of the employees) may request reconsideration of the decision on the additional classification request.

The request for reconsideration must be made in writing and must thoroughly address the denial reasons identified by DOL. Employer requests for reconsideration should be made through the contract administrator but may be made directly to DOL. (See DOL Regulations 29 CFR § 1.8.) All requests initiated by or made through the contract administrator or HUD must be submitted through HQLS (Headquarters Office Davis-Bacon and Labor Standards).

Administrative Review Board

Any interested party may request a review of the Administrator's decision on reconsideration by DOL's Administrative Review Board. DOL regulations 29 CFR Part 7 explain the procedures for such reviews. (See also 29 CFR § 1.9.)

Findings of underpayment

Compliance reviews and other follow-up enforcement actions may result in findings of underpayment. The primary goal in every case and at every step in this process is to reach agreements about who may have been underpaid and how much wage restitution may be due, and to promptly deliver restitution to any underpaid workers. The contract administrator will usually work informally with employers to reach such agreements.

Rulings and interpretations unrelated to findings of underpayment

DOL is the authority for rulings and interpretations unrelated to findings of underpayments. This includes disputes concerning the prevailing wage rates as determined by DOL, DBRA applicability, character of work decisions, and interpretation and application of DOL regulations at 29 CFR Parts 1, 3, and 5. These and other such matters must be referred to the DOL Wage and Hour Administrator for their ruling and/or interpretation per 29 CFR § 5.13. Any request for a ruling or an interpretation from the DOL Administrator via DBLS must be submitted through HQLS with a copy to the local LSS.

Disputes concerning findings of underpayment

Underpayments usually occur when a contractor or subcontractor does not properly pay wages according to the approved wage determination and it has been identified as part of a Davis-Bacon and DBLS enforcement action. There may be other situations that also create underpayments, and they can originate from the employer, prime contractor, or any other interested party. Any underpayment decision by DBLS will include a formal decision letter with a Notice of Right to Appeal.

DOL review

DOL will review the contract administrator's report and the arguments against the findings presented in the hearing request. DOL may affirm or modify the findings based upon the materials presented. You will be notified in writing by DOL of the results of its review. If DOL concludes that violations have occurred, you will be given an opportunity to correct any underpayments or to request a hearing before a DOL ALJ. (See DOL Regulations 29 CFR § 5.11 (b) and 29 CFR Part 6, Rules of Practice for Administrative Proceedings.)

Administrative Review Board

Contractors and/or subcontractors may request a review by the Administrative Review Board of the decision(s) rendered by the DOL ALJ in the administrative hearing process. See DOL regulations 29 CFR Part 7 for more information about this proceeding.

Withholding

The contract administrator shall cause the withholding of payments due to the prime contractor to ensure the payment of wages that are believed to be due and unpaid (e.g., if wage underpayments or other violations are not corrected within 30 days after written notification to the prime contractor). DOL may also direct the withholding of contract payments for alleged wage underpayments. Withholding is serious and is not taken unless warranted. If withholding is deemed necessary, the contractor will be notified in writing. Only the amounts needed to meet the contractor's (and/or subcontractors') liability shall be withheld.

Deposits and Escrows

In some situations, certain labor standards issues are not or cannot be resolved in time to meet project closeout schedules. In order to permit a final closing/closeout to proceed while certain labor issues are outstanding, a deposit account (HUD-administered projects, e.g. multifamily housing-insured and grant programs) or an escrow account (LCA-administered projects, e.g., CDBG, HOME, HOPE VI (Housing Opportunities for People Everywhere)) may be established as a guarantee to ensure the payment of any wages that have been or may be found due to workers that were employed in the construction of the project. Deposit and escrow accounts may also hold fringe benefits payments that are due to plans or programs and/or liquidated damages that are assessed for violations of CWHSSA O/T provisions. The deposit or escrow account is controlled by the contract administrator. When a final decision is rendered, the contract administrator makes disbursements from the account in accordance with the decision. Deposit/escrow accounts are established for one or more of the following reasons:

MORE INFO

Remember, the prime contractor is responsible and will be held liable for any wage restitution that is due to any worker employed in the construction of the project, including workers employed by subcontractors and any lower-tier subcontractors. See 3.2, Responsibilities of the Principal Contractor, and 12.4, Restitution for Underpayment of Wages, in the Agency Guide.

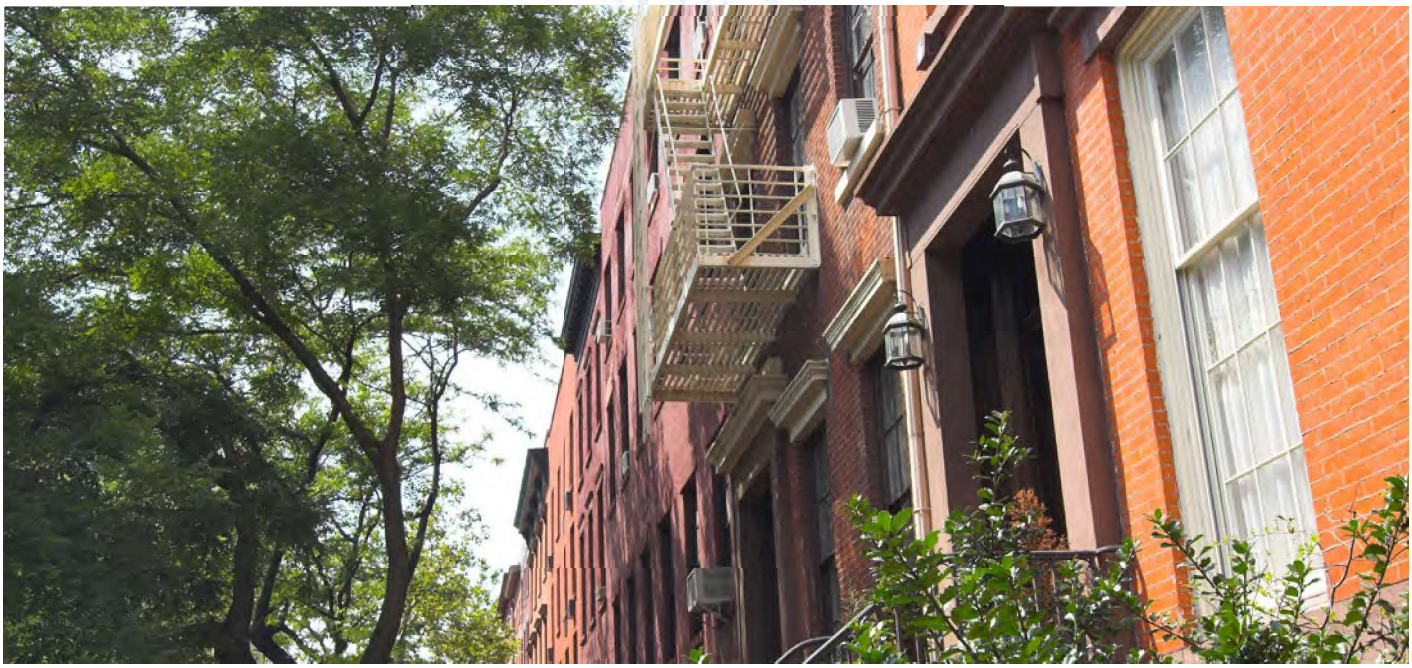
Where the parties have agreed to amounts of wage restitution that are due, but the employer hasn't furnished evidence yet that all the underpaid workers have received their back wages (e.g., unfound workers)

The amount of the deposit is equal to the total gross amount of restitution due to workers lacking payment evidence. As these workers are paid and proper documentation is provided to the contract administrator, amounts corresponding to the documented payments are returned to the depositor. Amounts for any workers who cannot be located are held in the deposit/escrow account for three years and disposed as described in Section 11.4.1 of this Guide;

Sometimes, wage restitution cannot be paid to an affected employee because, for example, the employee has moved and cannot be located. After wage restitution has been paid to all the workers who could be located, the employer must submit a list of any workers who could not be found and paid (unfound workers). See 12.4.6 in the Agency Guide for more information.

Where underpayments are suspected or alleged and an investigation has not yet been completed

The deposit is equal to the amount of wage restitution and any liquidated damages, if applicable, that are estimated to be due. If the final determination of wages due is less than the amount estimated and placed in the escrow account, the escrow will be reduced to the final amount and the difference will be returned to the depositor. If the parties agree to the investigative findings, the amounts due to the workers will be paid by the employer. As these workers are paid and proper



documentation is provided to the contract administrator, the gross amounts corresponding to the documented payments are returned to the depositor;

If the employer is unable to make the payments to the workers (e.g., lacks the funds necessary), the contract administrator may make disbursements directly to the workers in the net amounts calculated by the employer. The amounts withheld from the workers for tax deduction will be returned to the employer as payments to workers are made. The employer shall be responsible for reporting and transmitting withholdings to the appropriate agencies.

If the employer is not cooperating in the resolution, the contract administrator shall make disbursements to the workers in accordance with the schedule of wages due. Amounts for unfound workers will be retained as described in Section 13.4.6 in the Agency Guide.

If the parties do not agree and an administrative hearing is requested, the escrow will be maintained.

MORE INFO

Remember, if you have any questions or need assistance con cerning labor standards requirements, help is always available. Contact the contract administrator for the project you're work ing on or the HUD Field Labor Standards staff in your area.

Where the parties are waiting for the outcome of an administrative hearing that has been or will be requested contesting a final determination of wages due

The deposit shall be equal to the amount of wage restitution and liquidated damages, if applicable, that have been determined due. Once a final decision is rendered, disbursements from the escrow account are made in accordance with the decision.

Administrative Sanctions

Contractors and/or subcontractors that violate the labor standards provisions may face administrative sanctions imposed by HUD and/or DOL.

DOL debarment

Contractors and/or subcontractors that are found by the Secretary of Labor to be in aggravated or willful violation of the labor standards provisions of the DBRA will be ineligible (debarred) to participate in any DBRA or Davis-Bacon Act contracts for up to three years. Debarment includes the contractor or subcontractor and any firm, corporation, partnership, or association in which the contractor or subcontractor has a substantial interest. Debarment proceedings can be recommended by the contract administrator or initiated by DOL. Debarment proceedings are described in DOL regulations 29 CFR § 5.12.

HUD sanctions

HUD sanctions may include Limited Denials of Participation (LDPs), debarments, and suspensions.

Limited Denial of Participation

HUD may issue to the employer an LDP, which prohibits the employer from further participation in HUD programs for a period of up to one year. The LDP is usually effective for the HUD program in which the violation occurred and for the geographic jurisdiction of the issuing HUD Office. HUD regulations concerning LDPs are found at 24 CFR §§ 24.700-24.714.

Debarment and suspensions

In certain circumstances, HUD may initiate its own debarment or suspension proceedings against a contractor and/or subcontractor in connection with improper actions regarding Davis-Bacon obligations. For example, HUD may initiate debarment where a contractor has been convicted for making false statements (such as false statements on certified payrolls or other prevailing wage certifications), or initiate suspension where a contractor has been indicted for making false statements. HUD regulations concerning debarment and suspension are found at 24 CFR Part 24.

Falsification of Certified Payroll Reports

Cases that involve certified payroll falsification may be referred to DOL for its investigation at the outset or referred to DOL for administrative review/hearings or other sanctions.

All referrals suggesting consideration for criminal prosecution must be submitted through the established hierarchy:

States may submit any such recommendation to DOL directly.

MORE INFO

Remember, if you have any questions or need assistance con cerning labor standards requirements, help is always available. Contact the contract administrator for the project you're work ing on or the HUD Field Labor Standards staff in your area.

"General Decision Number: MA20260013 01/02/2026

Superseded General Decision Number: MA20250013

State: Massachusetts

Construction Type: Building

County: Worcester County in Massachusetts.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Modification Number	Publication Date
0	01/02/2026

ASBE0006-013 09/01/2024

	Rates	Fringes
ASBESTOS WORKER/HEAT & FROST INSULATOR (Duct, Pipe, & Mechanical System Insulation)	$ 49.10	36.63

BRMA0003-004 08/01/2024

	Rates	Fringes
TILE FINISHER	$ 49.32	35.26
TILE SETTER	$ 64.52	37.51

BRMA0003-005 08/01/2024

	Rates	Fringes
BRICKLAYER (Includes Pointing, Caulking, Cleaning,		

and Waterproofing).....$ 62.36 36.80

CARP0336-001 09/01/2025

Rates Fringes

CARPENTER (Includes
Acoustical Ceiling
installation, Batt
Insulation, Drywall Hanging,
Form Work, Metal
Building-Metal Siding/Wall
Panels, Metal Stud
Installation, Scaffold
Building, Fireproofer, Window
and Curtain Wall Installation)...$ 50.10 31.45

ELEC0096-003 09/07/2025

Rates Fringes

ELECTRICIAN
Includes HVAC/Temperature
Controls Installation.....$ 48.16 36.20
Low Voltage Wiring.....$ 36.12 34.51

ELEV0041-005 01/01/2025

Rates Fringes

ELEVATOR MECHANIC.....$ 66.41 38.435+a+b

FOOTNOTE:
a.Vacation: 6%/under 5 years based on regular hourly rate for all hours worked. 8%/over 5 years based on regular hourly rate for all hours worked.
b. PAID HOLIDAYS: New Year's Day; Memorial Day; Independence Day; Labor Day; Veterans' Day; Thanksgiving Day; the Friday

after Thanksgiving Day; and Christmas Day.

ENGI0004-012 06/01/2025

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
GROUP 1:		
Backhoe/Excavator/Trackhoe,		
Loader.....	$ 57.83	33.70
GROUP 2: Bulldozer.....	$ 57.18	33.70

FOOTNOTE:

A. Paid Holidays: New Year's Day, Washington's Birthday, Memorial Day, Independence Day, Patriot's Day, Columbus Day, Labor Day, Vetersns Day; Thanksgiving Day and Christmas Day.

IRON0007-018 09/16/2025

	Rates	Fringes
IRONWORKER (Ornamental, Reinforcing, and Structural).....	$ 57.57	37.67

LABR0721-002 12/01/2024

	Rates	Fringes
LABORER (Mason Tender-Brick).....	$ 38.95	29.81

PAIN0035-018 07/01/2024

	Rates	Fringes
PAINTER (Brush/Roller,		

Including Drywall
Finisher/Taper).....$ 46.26 36.00

PLUM0004-004 09/01/2025

Rates Fringes

PLUMBER/PIPEFITTER (Includes
HVAC Pipe and Unit
Installation).....$ 55.00 31.57

ROOF0033-005 08/01/2025

Rates Fringes

ROOFER.....$ 53.53 35.69

SHEE0063-006 07/01/2025

Rates Fringes

SHEET METAL WORKER (Includes
HVAC Duct and Unit
Installation).....$ 43.48 36.46

SUMA2014-002 04/04/2016

Rates Fringes

LABORER: Common or General.....$ 39.84 12.04

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

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave

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

Note: Executive Order 13658 generally applies to contracts subject to the Davis-Bacon Act that were awarded on or between January 1, 2015 and January 29, 2022, and that have not been renewed or extended on or after January 30, 2022. Executive Order 13658 does not apply to contracts subject only to the Davis-Bacon Related Acts regardless of when they were awarded. If a contract is subject to Executive Order 13658, the contractor must pay all covered workers at least $13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025. The applicable Executive Order minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under Executive Order 13658 is available at www.dol.gov/whd/govcontracts.

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

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

Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE:

UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007

01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

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

a) a survey underlying a wage determination
b) an existing published wage determination
c) an initial WHD letter setting forth a position on a wage determination matter
d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

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

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations.

Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

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

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

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

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

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

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

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END OF GENERAL DECISION

U.S. Department of Labor
Wage and Hour Division

Davis-Bacon and Related Acts Weekly Certified Payroll Form

(For Contractor's Optional Use; See Instructions at www.dol.gov/whd/forms/wh347instr.htm)

Unless otherwise noted, the information requested is specific to the named project below.

Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number.

U.S. Wage and Hour Division

Rev. January 2025
OMB No.: 1235-0008
Expires: 01/31/2028

☐ SUBMISSION OF FINAL DBRA CERTIFIED PAYROLL FORM ☐ PRIME CONTRACTOR ☐ SUBCONTRACTOR

PROJECT NAME	PROJECT NO. or CONTRACT NO.	CERTIFIED PAYROLL NO.	PRIME CONTRACTOR'S/SUBCONTRACTOR'S BUSINESS NAME
PROJECT LOCATION	**WAGE DETERMINATION NO.**	**WEEK ENDING DATE**	**PRIME CONTRACTOR'S/SUBCONTRACTOR'S BUSINESS ADDRESS**

(1A)	(1B)	(1C)	(1D)	(1E)	(2)	(3)	(4)								(5)	(6A)	(6B)	(6C)	(7A)	(7B)	(8)				(9)
WORKER ENTRY NO.	WORKER LAST NAME	WORKER FIRST NAME	WORKER MIDDLE INITIAL	WORKER IDENTIFYING NO.	(J) JOURNEYWORKER (RA) REGISTERD APPRENTICE	LABOR CLASSIFICATION	ST = STRAIGHT TIME OT = OVERTIME	(TOP) DAYS OF WORK WEEK (BOTTOM) DATES							TOTAL HOURS WORKED FOR WEEK	HOURLY WAGE RATE PAID FOR ST AND OT	TOTAL FRINGE BENEFIT CREDIT	PAYMENT IN LIEU OF FRINGE BENEFITS	GROSS AMT EARNED	GROSS AMT EARNED FOR **ALL WORK**	DEDUCTIONS FOR **ALL WORK**				NET PAY TO WORKER FOR **ALL WORK**
								HOURS WORKED EACH DAY													TAX WITH-HOLDINGS	FICA	OTHER (MUST SPECIFY, SEE INSTRUCTIONS)	TOTAL DEDUCTIONS	
							ST																		
							OT																		
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While use of Form WH-347 itself is optional, covered contractors and subcontractors performing work on Federal or federally assisted construction contracts are required by the DBRA regulations and the contract clauses to submit payroll information on a weekly basis. The Copeland Act (40 U.S.C. § 3145) requires contractors and subcontractors performing work on Federal or federally financed construction contracts to, on a weekly basis, "furnish a statement on the wages paid each employee during the prior week." U.S. Department of Labor (DOL) Regulations at 29 C.F.R. § 5.5(a)(3)(ii) require contractors and subcontractors to submit weekly certified payrolls to the appropriate Federal agency if the agency is a party to the contract (or, if the agency is not such a party, to the applicant, sponsor, owner, or other entity, as the case may be, that maintains such records, for transmission to the Federal agency). Each certified payroll must be accompanied by a signed "Statement of Compliance" (e.g., page 2 of the WH-347 or another document with identical wording) indicating that the certified payrolls are accurate and complete, and that each laborer or mechanic has been paid not less than the required Davis-Bacon prevailing wage rate(s) (including any fringe benefits) for the work performed. DOL and contracting agencies receiving this information review the information to determine whether workers have received legally required wages and fringe benefits.

Public Burden Statement

We estimate that it will take an average of 55 minutes to complete this collection, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. If you have any comments regarding these estimates or any other aspect of this collection, including suggestions for reducing this burden, send them to the Administrator, Wage and Hour Division, U.S. Department of Labor, Room S3502, 200 Constitution Avenue, N.W. Washington, D.C. 20210

(over)

PROJECT NAME	PROJECT NO. or CONTRACT NO.	PAYROLL NO.	PRIME CONTRACTOR'S/SUBCONTRACTOR'S BUSINESS NAME

PROJECT LOCATION	WEEK ENDING DATE	CERTIFYING OFFICIAL's NAME AND TITLE

I paid or supervised the payment of the laborers or mechanics working on the above project during the stated time period. I certify the following:

☐ The payroll information submitted with this statement is correct and complete for the above project during the above period, and the wage and fringe benefit rates paid to the workers, including credit taken for the reasonably anticipated costs of a bona fide fringe benefit plan, fund or program, are not less than the applicable wage and fringe benefits rates for the classification(s) of work actually performed, as specified in the wage determination(s) incorporated into the contract.

☐ All regular payrolls and all other basic records that the contractor is required to maintain for this payroll period are complete and accurate and will be made available upon request from the agency or the Department of Labor.

☐ The classifications reported for each laborer or mechanic are the classification(s) of work that each worker actually performed.

☐ Any workers paid as apprentices during the above period are duly registered in a bona fide apprenticeship program registered with the Office of Apprenticeship, Employment and Training Administration, United States Department of Labor ("OA"), or a State Apprenticeship Agency ("SAA") recognized by Department of Labor. I have verified the registered apprenticeship program information provided below as accurate and applicable to any apprentices identified on page 1 of this form.

APPRENTICESHIP PROGRAM NAME	REGISTERED		NAME OF LABOR CLASSIFICATION
	☐ OA	☐ SAA	
	☐ OA	☐ SAA	
	☐ OA	☐ SAA	

☐ Fringe benefits have been paid in cash and/or to bona fide fringe benefit plans, funds, or programs. Where the contractor is claiming an hourly credit for their contributions to or reasonably anticipated costs of a bona fide fringe benefit plan, fund, or program, provide plan information and the hourly credit claimed for each worker listed on the previous page of this form.

HOURLY CREDIT FOR FRINGE BENEFITS

If an amount is listed in (6B) on the first page of this certified payroll form, enter the hourly credit claimed under each plan name, type and number for each worker and check whether the plan is funded or unfunded.

NAME OF WORKER	FB NAME		FB NAME		FB NAME		FB NAME		FB NAME		FB NAME		TOTAL HOURLY CREDIT
	FB TYPE		FB TYPE		FB TYPE		FB TYPE		FB TYPE		FB TYPE		
	PLAN NO.		PLAN NO.		PLAN NO.		PLAN NO.		PLAN NO.		PLAN NO.		
	☐ Funded	☐ Unfunded	☐ Funded	☐ Unfunded	☐ Funded	☐ Unfunded	☐ Funded	☐ Unfunded	☐ Funded	☐ Unfunded	☐ Funded	☐ Unfunded	
	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	$
	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	$
	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	$
	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	$
	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	$
	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	$
	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	$
	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	Hourly Credit	$	Hrly Credit	$	$

☐ All workers on the project have been paid the full weekly wages earned, and no rebates or deductions have been or will be made either directly or indirectly, other than permissible deductions as defined in 29 CFR part 3.

ADDITIONAL REMARKS

SIGNATURE OF CERTIFYING OFFICIAL	DATE	TELEPHONE NUMBER	EMAIL ADDRESS
		(___) ___-____	

THE WILLFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION (SEE SECTION 1001 OF TITLE 18 AND SECTION 3729 OF TITLE 31 OF THE UNITED STATES CODE), AS WELL AS DEBARMENT FROM FUTURE FEDERAL AND FEDERALLY-ASSISTED CONTRACTS. INFORMATION REPORTED IN CERTIFIED PAYROLLS MAY BE SUBJECT TO DISCLOSURE IN RESPONSE TO A FREEDOM OF INFORMATION ACT REQUEST.

EXHIBIT B

FEDERALLY REQUIRED CONTRACT CLAUSES

EXHIBIT B

FEDERALLY REQUIRED CONTRACT ARTICLES

1. ACCESS TO RECORDS AND REPORTS
2. BONDING REQUIREMENTS
3. BUS TESTING – **NOT APPLICABLE TO THIS SOLICITATION**
4. BUY AMERICA REQUIREMENTS
5. CARGO PREFERENCE REQUIREMENTS
6. CHARTER SERVICE – **NOT APPLICABLE TO THIS SOLICITATION**
7. CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT
8. CIVIL RIGHTS LAWS AND REGULATIONS
9. DISADVANTAGED BUSINESS ENTERPRISE (DBE)
10. EMPLOYEE PROTECTIONS
11. ENERGY CONSERVATION
12. FLY AMERICA
13. GOVERNMENT-WIDE DEBARMENT AND SUSPENSION
14. LOBBYING RESTRICTIONS
15. NO GOVERNMENT OBLIGATIONS TO THIRD PARTIES
16. PATENT RIGHTS AND RIGHTS IN DATA
17. PRE-AWARD AND POST-DELIVERY AUDITS OF ROLLING STOCK PURCHASES – **NOT APPLICABLE TO THIS SOLICITATION**
18. PROGRAM FRAUD AND FALSE OR FRAUDULENT STATEMENTS AND RELATED ACTS
19. PUBLIC TRANSPORTATION EMPLOYEE PROTECTIVE ARRANGEMENTS – **NOT APPLICABLE TO THIS SOLICITATION**
20. RECYCLED PRODUCTS
21. SAFE OPERATION OF MOTOR VEHICLES
22. SCHOOL BUS OPERATIONS – **NOT APPLICABLE TO THIS SOLICITATION**
23. SEISMIC SAFETY

24. SUBSTANCE ABUSE REQUIREMENTS – **NOT APPLICABLE TO THIS SOLICITATION**

25. TERMINATION

26. VIOLATION AND BREACH OF CONTRACT

27. CHANGES TO FEDERAL REQUIREMENTS

28. INCORPORATION OF FTA TERMS

29. AMERICANS WITH DISABILITIES ACT (ADA)

30. CONFORMANCE WITH ITS NATIONAL ARCHITECTURE – **NOT APPLICABLE TO THIS SOLICITATION**

31. DAVIS-BACON ACT AND COPELAND ANTI-KICKBACK ACT

32. VETERANS HIRING PREFERENCE

33. NOTICE TO FTA AND U.S. D.O.T. INSPECTOR GENERAL OF INFORMATION RELATED TO FRAUD, WASTE, ETC.

34. PROHIBITION ON CERTAIN TELECOMMUNICATIONS EQUIPMENT

ARTICLE 1 - ACCESS TO RECORDS AND REPORTS - Applies to All Procurement Types, 49 U.S.C. § 5325(g), 2 C.F.R. § 200.333, 49 C.F.R. part 633

1.1 **Record Retention**. The Contractor will retain and will require its subcontractors of all tiers to retain, complete and readily accessible records related in whole or in part to the contract, including, but not limited to, data, documents, reports, statistics, sub-agreements, leases, subcontracts, arrangements, other third party agreements of any type, and supporting materials related to those records.

1.2 **Retention Period**. The Contractor agrees to comply with the record retention requirements in accordance with 2 C.F.R. § 200.333. The Contractor shall maintain all books, records, accounts and reports required under this Contract for a period of at not less than three (3) years after the date of termination or expiration of this Contract, except in the event of litigation or settlement of claims arising from the performance of this Contract, in which case records shall be maintained until the disposition of all such litigation, appeals, claims or exceptions related thereto.

1.3 **Access to Records**. The Contractor agrees to provide sufficient access to FTA and its contractors to inspect and audit records and information related to performance of this contract as reasonably may be required.

1.4 **Access to the Sites of Performance.** The Contractor agrees to permit FTA and its contractors access to the sites of performance under this contract as reasonably may be required.

ARTICLE 2 - BONDING REQUIREMENTS - Applies to Construction Procurements > $250,000, 2 C.F.R. § 200.325, 31 C.F.R. part 223

Bond Requirements

Bid Guarantee

Bidders shall furnish a bid guaranty in the form of a bid bond, made in form provided as EXHIBIT C of the CITY Standard Contract – Owner-Contractor Agreement. The amount of such guaranty shall be equal to 5% of the total bid price.

In submitting this bid, it is understood and agreed by bidder that the CITY reserves the right to reject any and all bids, or part of any bid, and it is agreed that the Bid may not be withdrawn for a period of [90] days subsequent to the opening of bids, without the written consent of the CITY.

It is also understood and agreed that if the undersigned bidder should withdraw any part or all of his bid within [90] days after the bid opening without the written consent of the CITY, or refuse or be unable to enter into this Contract as provided above, or refuse or be unable to furnish adequate and acceptable Performance and Payment Bonds, or refuse or be unable to furnish adequate and acceptable insurance, as provided above, it shall forfeit its bid guaranty to the extent CITY'S damages occasioned by such withdrawal, or refusal, or inability to enter into an agreement, or provide adequate security thereof.

It is further understood and agreed that to the extent the defaulting bidder's bid guaranty shall prove inadequate to fully recompense CITY for the damages occasioned by default, then the undersigned bidder agrees to indemnify CITY and pay over to CITY the difference between the bid guarantee and CITY'S total damages so as to make CITY whole.

The undersigned understands that any material alteration of any of the above or any of the material contained herein, other than that requested will render the bid unresponsive.

Performance Guarantee

A Performance Guarantee in the amount of 100% of the Contract value is required by the CITY to ensure faithful performance of the Contract. A Performance Bond shall be provided by the Contractor and shall remain in full force for the term of the Agreement. The successful Bidder shall certify that it will provide the requisite Performance Guarantee to the CITY within ten (10) business days from Contract execution.

The CITY requires all Performance Bonds to be provided by a fully qualified surety company acceptable to the CITY and listed as a company currently authorized under 31 C.F.R. part 22 as possessing a Certificate of Authority as described hereunder. CITY may require additional performance bond protection when the contract price is increased. The increase in protection shall generally equal 100 percent of the increase in contract price. The CITY may secure additional protection by directing the Contractor to increase the amount of the existing bond or to obtain an additional bond.

Payment Bonds

A Labor and Materials Payment Bond equal to the full value of the contract must be furnished by the contractor to CITY as security for payment by the Contractor and subcontractors for labor, materials, and rental of equipment. The bond may be issued by a fully qualified surety company acceptable to (CITY) and listed as a company currently authorized under 31 C.F.R. part 223 as possessing a Certificate of Authority as described thereunder.

ARTICLE 3 - BUS TESTING – NOT APPLICABLE TO THIS SOLICITATION

ARTICLE 4 - BUY AMERICA REQUIREMENTS - Applies to Rolling Stock, Construction, Materials & Supplies Contracts >$150,000, 49 U.S.C. 5323(j), 49 C.F.R. part 661

Buy America

The contractor agrees to comply with 49 U.S.C. 5323(j) and 49 C.F.R. part 661, which provide that Federal funds may not be obligated unless all steel, iron, and manufactured products used in FTA funded projects are produced in the United States, unless a waiver has been granted by FTA or the product is subject to a general waiver. General waivers are listed in 49 C.F.R. § 661.7. Separate requirements for rolling stock are set out at 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. § 661.11.

The [bidder or offeror] must submit to [CITY] the appropriate Buy America certification below with its [bid or offer]. Bids or offers that are not accompanied by a completed Buy America certification will be rejected as non-responsive.

In accordance with 49 C.F.R. § 661.6, for the procurement of steel, iron or manufactured products, use the certifications below.

Certificate of Compliance with Buy America Requirements

The bidder or offeror hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j)(1), and the applicable regulations in 49 C.F.R. part 661.

Date: _____

Signature: _____

Company: _____

Name: _____

Title: _____

Certificate of Non-Compliance with Buy America Requirements

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j), but it may qualify for an exception to the requirement pursuant to 49 U.S.C. 5323(j)(2), as amended, and the applicable regulations in 49 C.F.R. § 661.7.

Date: _____

Signature: _____

Company: _____

Name: _____

Title: _____

In accordance with 49 C.F.R. § 661.12, for the procurement of rolling stock (including train control, communication, and traction power equipment) use the following certifications:

Certificate of Compliance with Buy America Rolling Stock Requirements

The bidder or offeror hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j), and the applicable regulations of 49 C.F.R. § 661.11.

Date: _____

Signature: _____

Company: _____

Name: _____

Title: _____

Certificate of Non-Compliance with Buy America Rolling Stock Requirements

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j), but may qualify for an exception to the requirement consistent with 49 U.S.C. 5323(j)(2)(C), and the applicable regulations in 49 C.F.R. § 661.7.

Date: _____

Signature: _____

Company: _____

Name: _____

Title: _____

ARTICLE 5 - CARGO PREFERENCE REQUIREMENTS - Applies to Rolling Stock, Construction, Material & Supplies that may be transported by ocean vessel, 46 U.S.C. § 55305, 46 C.F.R. part 381

Cargo Preference - Use of United States-Flag Vessels

The contractor agrees:

5.1 To use privately owned United States-Flag commercial vessels to ship at least 50 percent of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to the underlying contract to the extent such vessels are available at fair and reasonable rates for United States-Flag commercial vessels.

5.2 to furnish within 20 working days following the date of loading for shipments originating within the United States or within 30 working days following the date of loading for shipments originating outside the United States, a legible copy of a rated, "on-board" commercial ocean bill-of-lading in English for each shipment of cargo described in the preceding paragraph to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, DC 20590 and to the FTA CITY (through the contractor in the case of a subcontractor's bill-of-lading.); and

5.3 to include these requirements in all subcontracts issued pursuant to this contract when the subcontract may involve the transport of equipment, material, or commodities by ocean vessel.

ARTICLE 6 - CHARTER SERVICE – NOT APPLICABLE TO THIS SOLICITATION

ARTICLE 7 - CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT - Applies to All Procurement Types >$150,000, 42 U.S.C. §§ 7401 – 7671q, 33 U.S.C. §§ 1251-1387, 2 C.F.R. part 200, Appendix II (G)

The Contractor agrees:

7.1 It will not use any violating facilities.

7.2 It will report the use of facilities placed on or likely to be placed on the U.S. EPA "List of Violating Facilities".

7.3 It will report violations of use of prohibited facilities to FTA.

7.4 It will comply with the inspection and other requirements of the Clean Air Act, as amended, (42 U.S.C. §§ 7401 – 7671q) and the Federal Water Pollution Control Act as amended, (33 U.S.C. §§ 1251-1387).

ARTICLE 8 - CIVIL RIGHTS LAWS AND REGULATIONS - Applies to All Procurement Types

Civil Rights and Equal Opportunity

The CITY is an Equal Opportunity Employer. As such, the CITY agrees to comply with all applicable Federal civil rights laws and implementing regulations. Apart from inconsistent requirements imposed by Federal laws or regulations, the CITY agrees to comply with the requirements of 49 U.S.C. § 5323(h) (3) by not using any Federal assistance awarded by FTA to support procurements using exclusionary or discriminatory specifications.

Under this Agreement, the Contractor shall at all times comply with the following requirements and shall include these requirements in each subcontract entered into as part thereof.

8.1 **Nondiscrimination**. In accordance with Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against any employee or applicant for employment because of race, color, religion, national origin, sex, disability, or age. In addition, the Contractor agrees to comply with applicable Federal implementing regulations and other implementing requirements FTA may issue.

8.2 **Race, Color, Religion, National Origin, Sex.** In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. § 2000e et seq., and Federal transit laws at 49 U.S.C. § 5332, the Contractor agrees to comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (U.S. DOL) regulations, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," 41 C.F.R. chapter 60, and Executive Order No. 11246, "Equal Employment Opportunity in Federal Employment," September 24, 1965, 42 U.S.C. § 2000e note, as amended by any later Executive Order that amends or supersedes it, referenced in 42 U.S.C. § 2000e note. The Contractor agrees to take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, national origin, or sex (including sexual orientation and gender identity). Such action shall include, but not be limited to, the following: employment, promotion, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

8.3 **Age**. In accordance with the Age Discrimination in Employment Act, 29 U.S.C. §§ 621- 634, U.S. Equal Employment Opportunity Commission (U.S. EEOC) regulations, "Age Discrimination in Employment Act," 29 C.F.R. part 1625, the Age Discrimination Act of 1975, as amended, 42 U.S.C. § 6101 et seq., U.S. Health and Human Services regulations, "Nondiscrimination on the Basis of Age in Programs or Activities Receiving Federal Financial Assistance," 45 C.F.R. part 90, and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees to refrain from discrimination against present and prospective employees for reason of age. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

8.4 **Disabilities**. In accordance with section 504 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. § 794, the Americans with Disabilities Act of 1990, as amended, 42 U.S.C. § 12101 et seq., the Architectural Barriers Act of 1968, as amended, 42 U.S.C. § 4151 et seq., and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against individuals on the basis of disability. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.

8.5 **Special DOL EEO Clause** – Applies to construction contracts > $10,000;

This contractor and subcontractor shall abide by the requirements of 41 CFR 60-1.4(a), 60-300.5(a) and 60- 741.5(a). These regulations prohibit discrimination against qualified individuals based on their status as protected veterans or individuals with disabilities and prohibit discrimination against all individuals based on their race, color, religion, sex, sexual orientation, gender identity or national origin. Moreover, these regulations require that covered prime contractors and subcontractors take affirmative action to employ and advance in employment individuals without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, disability or veteran status.

ARTICLE 9 - DISADVANTAGED BUSINESS ENTERPRISE (DBE) - Applies to All Procurement Types, 49 C.F.R. part 26

The following contract clause is required in all DOT-assisted prime and subcontracts:

9.1 This contract is subject to the requirements of Title 49, Code of Federal Regulations, Part 26, Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs. The project's overall goal for DBE participation is 0.66%; (City of Worcester (City) the Federal Grant Subrecipient & Worcester Regional Transit Authority (WRTA) Federal Grant Recipient's combined goal).

9.2 The contractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of this DOT-assisted contract. Failure by the contractor to carry

out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the CITY deems appropriate, which may include, but is not limited to:

9.2.1 Withholding monthly progress payments.

9.2.2 Assessing sanctions.

9.2.3 Liquidated damages.

9.2.4 Disqualifying the contractor from future bidding as non-responsible. 49 C.F.R. § 26.13(b).

Each subcontract the contractor signs with a subcontractor must include the assurance in this paragraph (see 49 CFR 26.13(b)).

9.3 The successful bidder/offeror will be required to report its DBE participation obtained through race-neutral means throughout the period of performance.

9.4 **PROMPT PAYMENT** - The contractor is required to pay its subcontractors performing work related to this contract for satisfactory performance of that work no later than 30 days after the contractor's receipt of payment for that work from the CITY**.** In addition, the contractor is required to return any retainage payments to those subcontractors within 30 days after the subcontractor's work related to this contract is satisfactorily completed.

9.5 The contractor must promptly notify the CITY, whenever a DBE subcontractor performing work related to this contract is terminated or fails to complete its work, and must make good faith efforts to engage another DBE subcontractor to perform at least the same amount of work. The contractor may not terminate any DBE subcontractor and perform that work through its own forces or those of an affiliate without prior written consent of the CITY**.**

9.6 Additional information for contracts with Contract Goals

Overview

It is the policy of the CITY and the United States Department of Transportation ("DOT") that Disadvantaged Business Enterprises ("DBE's"), as defined herein and in the Federal regulations published at 49 C.F.R. part 26, shall have an equal opportunity to participate in DOT-assisted contracts. It is also the policy of the CITY to:

1. Ensure nondiscrimination in the award and administration of DOT-assisted contracts;
2. Create a level playing field on which DBE's can compete fairly for DOT-assisted contracts;
3. Ensure that the DBE program is narrowly tailored in accordance with applicable law;
4. Ensure that only firms that fully meet 49 C.F.R. part 26 eligibility standards are permitted to participate as DBE's;
5. Help remove barriers to the participation of DBEs in DOT assisted contracts;
6. To promote the use of DBEs in all types of federally assisted contracts and procurement activities; and
7. Assist in the development of firms that can compete successfully in the marketplace outside the DBE program.

This Contract is subject to 49 C.F.R. part 26. Therefore, the Contractor must satisfy the requirements for DBE participation as set forth herein. These requirements are in addition to all other equal opportunity employment requirements of this Contract. The CITY shall make all determinations with regard to whether or not a Bidder/Offeror is in compliance with the requirements stated herein. In assessing compliance, the CITY may consider during its review of the Bidder/Offeror's submission

package, the Bidder/Offeror's documented history of non-compliance with DBE requirements on previous contracts with the CITY.

Contract Assurance

The Contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this Contract. The Contractor shall carry out applicable requirements of 49 C.F.R. part 26 in the award and administration of DOT-assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this Contract, which may result in the termination of this Contract or such other remedy as the CITY deems appropriate.

DBE Participation

For the purpose of this Contract, the CITY will accept only DBE's who are Certified, at the time of bid opening or proposal evaluation, by the MassDOT Unified Certification Program (UCP).

DBE Participation Goal

The DBE participation goal for this Contract is set at 0.66%. This goal represents those elements of work under this Contract performed by qualified Disadvantaged Business Enterprises for amounts totaling **not less than** 0 % of the total Contract price. Failure to meet the stated goal at the time of proposal submission **may** render the Bidder/Offeror non-responsive.

Proposed Submission

Each Bidder/Offeror, as part of its submission, shall supply the following information:

1. A completed DBE Utilization Form (see below) that indicates the percentage and dollar value of the total bid/contract amount to be supplied by Disadvantaged Business Enterprises under this Contract.
2. A list of those qualified DBE's with whom the Bidder/Offeror intends to contract for the performance of portions of the work under the Contract, the agreed price to be paid to each DBE for work, the Contract items or parts to be performed by each DBE, a proposed timetable for the performance or delivery of the Contract item, and other information as required by the **DBE Participation Schedule** (see below). No work shall be included in the Schedule that the Bidder/Offeror has reason to believe the listed DBE will subcontract, at any tier, to other than another DBE. If awarded the Contract, the Bidder/Offeror may not deviate from the DBE Participation Schedule submitted in response to the bid. Any subsequent changes and/or substitutions of DBE firms will require review and written approval by the CITY.
3. An original **DBE Letter of Intent** (see below) from each DBE listed in the DBE Participation Schedule.
4. An original **DBE Affidavit** (see below) from each DBE stating that there has not been any change in its status since the date of its last certification.

Good Faith Efforts

If the Bidder/Offeror is unable to meet the goal set forth above (DBE Participation Goal), the CITY will consider the Bidder/Offeror's documented good faith efforts to meet the goal in determining responsiveness. The types of actions that the CITY will consider as part of the Bidder/Offeror's good faith efforts include, but are not limited to, the following:

1. Documented communication with the CITY's DBE Coordinator (questions of IFB or RFP requirements, subcontracting opportunities, appropriate certification, will be addressed in a timely fashion);
2. Pre-bid meeting attendance. At the pre-bid meeting, the CITY generally informs potential

Bidder/Offeror's of DBE subcontracting opportunities;

3. The Bidder/Offeror's own solicitations to obtain DBE involvement in general circulation media, trade association publication, minority-focus media and other reasonable and available means within sufficient time to allow DBEs to respond to the solicitation;
4. Written notification to DBE's encouraging participation in the proposed Contract; and
5. Efforts made to identify specific portions of the work that might be performed by DBE's.

The Bidder/Offeror shall provide the following details, at a minimum, of the specific efforts it made to negotiate in good faith with DBE's for elements of the Contract:

1. The names, addresses, and telephone numbers of DBE's that were contacted;
2. A description of the information provided to targeted DBE's regarding the specifications and bid proposals for portions of the work;
3. Efforts made to assist DBE's contacted in obtaining bonding or insurance required by the Bidder or the Authority.

Further, the documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted when a non-DBE subcontractor was selected over a DBE for work on the contract. 49 C.F.R. § 26.53(b) (2) (VI). In determining whether a Bidder has made good faith efforts, the Authority may take into account the performance of other Bidders in meeting the Contract goals. For example, if the apparent successful Bidder failed to meet the goal, but meets or exceeds the average DBE participation obtained by other Bidders, the Authority may view this as evidence of the Bidder having made good faith efforts.

Administrative Reconsideration

Within five (5) business days of being informed by the CITY that it is not responsive or responsible because it has not documented sufficient good faith efforts, the Bidder/Offeror may request administrative reconsideration. The Bidder should make this request in writing to the CITY's DBELO/CFO. The DBELO/CFO will forward the Bidder/Offeror's request to a reconsideration official who will not have played any role in the original determination that the Bidder/Offeror did not document sufficient good faith efforts.

As part of this reconsideration, the Bidder/Offeror will have the opportunity to provide written documentation or argument concerning the issue of whether it met the goal or made adequate good faith efforts to do so. The Bidder/Offeror will have the opportunity to meet in person with the assigned reconsideration official to discuss the issue of whether it met the goal or made adequate good faith efforts to do so. The CITY will send the Bidder/Offeror a written decision on its reconsideration, explaining the basis for finding that the Bidder/Offeror did or did not meet the goal or make adequate A-34 good faith efforts to do so. The result of the reconsideration process is not administratively appealable to the Department of Transportation.

Termination of DBE Subcontractor

The Contractor shall not terminate the DBE subcontractor(s) listed in the **DBE Participation Schedule** (see below) without the CITY's prior written consent. The CITY may provide such written consent only if the Contractor has good cause to terminate the DBE firm. Before transmitting a request to terminate, the Contractor shall give notice in writing to the DBE subcontractor of its intent to terminate and the reason for the request. The Contractor shall give the DBE five days to respond to the notice and advise of the reasons why it objects to the proposed termination. When a DBE subcontractor is terminated or fails to complete its work on the Contract for any reason, the Contractor shall make good faith efforts to find another DBE subcontractor to substitute for the original DBE and immediately notify the CITY in writing of its efforts to replace the original DBE. These good

faith efforts shall be directed at finding another DBE to perform at least the same amount of work under the Contract as the DBE that was terminated, to the extent needed to meet the Contract goal established for this procurement.

Failure to comply with these requirements will be in accordance with Section 8 below (Sanctions for Violations).

Continued Compliance

The CITY shall monitor the Contractor's DBE compliance during the life of the Contract. In the event this procurement exceeds ninety (90) days**, it will be the responsibility of the Contractor to submit quarterly written reports to the CITY** that summarize the total DBE value for this Contract.

These reports shall provide the following details:

1. DBE utilization established for the Contract.
2. Total value of expenditures with DBE firms for the quarter.
3. The value of expenditures with each DBE firm for the quarter by race and gender.
4. Total value of expenditures with DBE firms from inception of the Contract.
5. The value of expenditures with each DBE firm from the inception of the Contract by race and gender.

Reports and other correspondence must be submitted to the DBE Coordinator with copies provided to the Worcester Redevelopment Authority. Reports shall continue to be submitted quarterly until final payment is issued or until DBE participation is completed.

The successful Bidder/Offeror shall permit:

1. The CITY to have access to necessary records to examine information as the CITY deems appropriate for the purpose of investigating and determining compliance with this provision, including, but not limited to, records of expenditures, invoices, and contract between the successful Bidder/Offeror and other DBE parties entered into during the life of the Contract.
2. The authorized representative(s) of the CITY, the U.S. Department of Transportation, the Comptroller General of the United States, to inspect and audit all data and record of the Contractor relating to its performance under the Disadvantaged Business Enterprise Participation provision of this Contract.
3. All data/record(s) pertaining to DBE shall be maintained as stated in Section [insert reference to record keeping requirements for the Project.]

Sanctions for Violations

If at any time the CITY has reason to believe that the Contractor is in violation of its obligations under this Agreement or has otherwise failed to comply with terms of this Section, the CITY may, in addition to pursuing any other available legal remedy, commence proceedings, which may include but are not limited to, the following:

1. Suspension of any payment or part due the Contractor until such time as the issues concerning the Contractor's compliance are resolved; and
2. Termination or cancellation of the Contract, in whole or in part, unless the successful Contractor is able to demonstrate within a reasonable time that it is in compliance with the DBE terms stated herein.

DBE Utilization Form

BID:	NAME OF BIDDER:

The undersigned Bidder/Offeror has satisfied the requirements of the solicitation in the following manner (please check the appropriate space):

____The Bidder/Offer is committed to a minimum of _____% DBE utilization on this contract.

____ The Bidder/Offeror (if unable to meet the DBE goal of %) is committed to a minimum of ____% DBE utilization on this contract and submits documentation demonstrating good faith efforts.

_____

Name of Bidder

_____

Signature / Title

_____

Date

DBE Participation Schedule

The Bidder/Offeror shall complete the following information for all DBE's participating in the contract that comprises the DBE Utilization percent stated in the DBE Utilization Form. The Bidder/Offeror shall also furnish the name and telephone number of the appropriate contact person should the Authority have any questions in relation to the information furnished herein.

DBE Participation Schedule

BID:	NAME OF BIDDER:

The undersigned Bidder/Offeror provides the following information for all DBE's participating in the contract that comprises the DBE Utilization percent stated in the DBE Utilization Form:

DBE Identification and Information Form

Name and Address	Contact Name and Telephone Number	Participation Percent (Of Total Contract Value)	Description Of Work To Be Performed	Performed Race and Gender of Firm

Name of Bidder

Signature / Title

Date

DBE Identification and Information Form (Continued)

Name and Address	Contact Name and Telephone Number	Participation Percent (Of Total Contract Value)	Description Of Work To Be Performed	Performed Race and Gender of Firm

LETTER OF INTENT TO PERFORM AS A SUBCONTRACTOR

BID:	NAME OF BIDDER:

The undersigned intends to perform work in connection with the above contract upon execution of the bid and subsequent award of contract by the Worcester Redevelopment Authority as:

Name of MBE/WBE/DBE Subcontractor:

_____

_____

Address:

City: _____State: _____Zip: _____

Please check all that apply:

Minority Business Enterprise (MBE): __, Women Business Enterprise (WBE): __, Disadvantaged Business Enterprise (DBE): __

The MBE /WBE /DBE status of the above named subcontractor is certified by the Commonwealth of Massachusetts Certification Program. The above named subcontractor is prepared to perform the work described in Bid #: _____ Section #: _____ in connection with the above contract upon execution of the bid and subsequent award of contract by the Worcester Redevelopment Authority. The above named subcontractor is prepared to perform the described work at the estimated Commitment Total below.

Commitment Total: Amount **$** _____

This document shall not serve in any manner as an actual subcontract between the two parties. A separate subcontractor agreement will describe in detail the contractual obligations of the bidder and the MBE/WBE/DBE subcontractor.

Affirmation

The above named MBE/ WBE/ DBE subcontractor affirms that it will perform the portion(s) of the contract for the estimated dollar value as stated above.

Name of MBE/ WBE/ DBE Subcontractor	**Name of Bidder**
Signature / Title	**Signature / Title**
Date	**Date**

Affidavit of Good Standing

BID:	NAME OF BIDDER:

The undersigned affirms that there has been no change in certification status under the Commonwealth of Massachusetts Certification Program since the last date of certification

Please check all that apply:

Minority Business Enterprise (MBE): _____ Date Certified:_____

Women Business Enterprise (WBE): _____ Date Certified:_____

Disadvantaged Business Enterprise (DBE): _____ Date Certified:_____

_____

Name of MBE/ WBE/ DBE Subcontractor

_____

Signature / Title

_____

Date

ARTICLE 10 - EMPLOYEE PROTECTIONS - Applicability – See each section, 49 U.S.C. § 5333(a), 40 U.S.C. §§ 3141 – 3148, 29 C.F.R. part 5, 18 U.S.C. § 874, 29 C.F.R. part 3, 40 U.S.C. §§3701-3708, 29 C.F.R. part 1926

Prevailing Wage and Anti-Kickback

Applies to Construction Contracts >$2,000

For all prime construction, alteration or repair contracts in excess of $2,000 awarded by FTA, the Contractor shall comply with the Davis-Bacon Act and the Copeland "Anti-Kickback" Act. Under 49 U.S.C. § 5333(a), prevailing wage protections apply to laborers and mechanics employed on FTA assisted construction, alteration, or repair projects. The Contractor will comply with the Davis-Bacon Act, 40 U.S.C. §§ 3141-3144, and 3146-3148 as supplemented by DOL regulations at 29 C.F.R. part 5, "Labor Standards Provisions Applicable to Contracts Governing Federally Financed and Assisted Construction." In accordance with the statute, the Contractor shall pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, the Contractor agrees to pay wages not less than once a week. The Contractor shall also comply with the Copeland "Anti-Kickback" Act (40 U.S.C. § 3145), as supplemented by DOL regulations at 29 C.F.R. part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in part by Loans or Grants from the United States." The Contractor is prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled.

Contract Work Hours and Safety Standards

Applies to Operations/Management/Subrecipients, Rolling Stock, Construction Contracts >$250,000

For all contracts in excess of $250,000 that involve the employment of mechanics or laborers, the Contractor shall comply with the Contract Work Hours and Safety Standards Act (40 U.S.C. §§ 3701-3708), as supplemented by the DOL regulations at 29 C.F.R. part 5. Under 40 U.S.C. § 3702 of the Act, the Contractor shall compute the wages of every mechanic and laborer, including watchmen and guards, on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. § 3704 are applicable to construction work and provide that no laborer or mechanic be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchase of supplies or materials or articles ordinarily available on the open market, or to contracts for transportation or transmission of intelligence.

In the event of any violation of the clause set forth herein, the Contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, the Contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of this clause in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by this clause.

The FTA shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the Contractor or subcontractor under any such contract or any other Federal contract with the same prime Contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime Contractor, such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in this section.

The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime Contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in this agreement.

Contract Work Hours and Safety Standards for Awards Not Involving Construction

The Contractor shall comply with all federal laws, regulations, and requirements providing wage and hour protections for non-construction employees, in accordance with 40 U.S.C. § 3702, Contract Work Hours and Safety Standards Act, and other relevant parts of that Act, 40 U.S.C. § 3701 et seq., and U.S. DOL regulations, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction (also Labor Standards Provisions Applicable to Non-construction Contracts Subject to the Contract Work Hours and Safety Standards Act)," 29 C.F.R. part 5.

The Contractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three (3) years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Such records maintained under this paragraph shall be made available by the Contractor for inspection, copying, or transcription by authorized representatives of the FTA and the Department of Labor, and the Contractor will permit such representatives to interview employees during working hours on the job.

The contractor shall require the inclusion of the language of this clause within subcontracts of all tiers.

ARTICLE 11 - ENERGY CONSERVATION - Applies to All Procurements, 42 U.S.C. 6321 et seq., 49 C.F.R. part 622, subpart C

The contractor agrees to comply with mandatory standards and policies relating to energy efficiency, which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act.

ARTICLE 12 - FLY AMERICA - Applies to All Procurements involving foreign transport or travel by air, 49 U.S.C. § 40118, 41 C.F.R. part 301-10, 48 C.F.R. part 47.4

Fly America Requirements

12.1 Definitions. As used in this clause—

"International air transportation" means transportation by air between a place in the United States and a place outside the United States or between two places both of which are outside the United States.

"United States" means the 50 States, the District of Columbia, and outlying areas.

"U.S.-flag air carrier" means an air carrier holding a certificate under 49 U.S.C. Chapter 411.

12.2 When Federal funds are used to fund travel, Section 5 of the International Air Transportation Fair Competitive Practices Act of 1974 (49 U.S.C. 40118) (Fly America Act) requires contractors, CITYs, and others use U.S.-flag air carriers for U.S. Government-financed international air transportation of personnel (and their personal effects) or property, to the extent that service by those carriers is available. It requires the Comptroller General of the United States, in the absence of satisfactory proof of the necessity for foreign-flag air transportation, to disallow expenditures from funds, appropriated or otherwise established for the account of the United States, for international air transportation secured aboard a foreign-flag air carrier if a U.S.-flag air carrier is available to provide such services.

12.3 If available, the Contractor, in performing work under this contract, shall use U.S.-flag carriers for international air transportation of personnel (and their personal effects) or property.

12.4 In the event that the Contractor selects a carrier other than a U.S.-flag air carrier for international air transportation, the Contractor shall include a statement on vouchers involving such transportation essentially as follows:

Statement of Unavailability of U.S.-Flag Air Carriers

International air transportation of persons (and their personal effects) or property by U.S.-flag air carrier was not available or it was necessary to use foreign-flag air carrier service for the following reasons. See FAR § 47.403. [State reasons]: _____

(End of statement)

12.5 The Contractor shall include the substance of this clause, including this paragraph (e), in each subcontract or purchase under this contract that may involve international air transportation.

(End of Clause)

ARTICLE 13 - GOVERNMENT-WIDE DEBARMENT AND SUSPENSION - Applies to All Contracts >$25,000, 2 C.F.R. part 180, 2 C.F.R part 1200, 2 C.F.R. § 200.213, 2 C.F.R. part 200 Appendix II (I) Executive Order 12549, Executive Order 12689

Debarment, Suspension, Ineligibility and Voluntary Exclusion

The Contractor shall comply and facilitate compliance with U.S. DOT regulations, "Nonprocurement Suspension and Debarment," 2 C.F.R. part 1200, which adopts and supplements the U.S. Office of Management and Budget (U.S. OMB) "Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement)," 2 C.F.R. part 180. These provisions apply to each contract at any tier of $25,000 or more, and to each contract at any tier for a federally required audit (irrespective of the contract amount), and to each contract at any tier that must be approved by an FTA official irrespective of the contract amount. As such, the Contractor shall verify that its principals, affiliates, and subcontractors are eligible to participate in this federally funded contract and are not presently declared by any Federal department or agency to be:

1. Debarred from participation in any federally assisted Award.
2. Suspended from participation in any federally assisted Award.
3. Proposed for debarment from participation in any federally assisted Award.
4. Declared ineligible to participate in any federally assisted Award.
5. Voluntarily excluded from participation in any federally assisted Award.
6. Disqualified from participation in any federally assisted Award.

By signing and submitting its bid or proposal, the bidder or proposer certifies as follows:

The certification in this clause is a material representation of fact relied upon by the CITY. If it is later determined by the CITY that the bidder or proposer knowingly rendered an erroneous certification, in addition to remedies available to the CITY, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment. The bidder or proposer agrees to comply with the requirements of 2 C.F.R. part 180, subpart C, as supplemented by 2 C.F.R. part 1200, while this offer is valid and throughout the period of any contract that may arise from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

ARTICLE 14 - LOBBYING RESTRICTIONS - Applies to All Contracts >$100,000, 31 U.S.C. § 1352, 2 C.F.R. § 200.450, 2 C.F.R. part 200 appendix II (J) 49 C.F.R. part 20

Lobbying Restrictions

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

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
3. The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all subCITYs shall certify and disclose accordingly.

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

Signature of Contractor's Authorized Official: _____

Name and Title of Contractor's Authorized Official: _____

Date: _____

ARTICLE 15 - NO GOVERNMENT OBLIGATION TO THIRD PARTIES - Applies to All Contracts

The CITY and Contractor acknowledge and agree that, notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of the underlying Contract, absent the express written consent by the Federal Government, the Federal Government is not a party to this Contract and shall not be subject to any obligations or liabilities to the CITY, Contractor or any other party (whether or not a party to that contract) pertaining to any matter resulting from the underlying Contract. The Contractor agrees to include the above clause in each subcontract financed in whole or in part with Federal assistance provided by the FTA. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions.

ARTICLE 16 - PATENT RIGHTS AND RIGHTS IN DATA - Applies to Professional Services/A&E – Research & Development, 2 C.F.R. part 200, Appendix II (F) 37 C.F.R. part 401

Intellectual Property Rights This Project is funded through a Federal award with FTA for experimental, developmental, or research work purposes. As such, certain Patent Rights and Data Rights apply to all subject data first produced in the performance of this Contract. The Contractor shall grant the CITY intellectual property access and licenses deemed necessary for the work performed under this Agreement and in accordance with the requirements of 37 C.F.R. part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by FTA or U.S. DOT. The terms of an intellectual property agreement and software license rights will be finalized prior to execution of this Agreement and shall, at a minimum, include the following restrictions: Except for its own internal use, the Contractor may not publish or reproduce subject data in whole or in part, or in any manner or form, nor may the Contractor authorize others to do so, without the written consent of FTA, until such time as FTA may have either released or approved the release of such data to the public. This restriction on publication, however, does not apply to any contract with an academic institution. For purposes of this agreement, the term "subject data" means recorded information whether or not copyrighted, and that is delivered or specified to be delivered as required by the Contract. Examples of "subject data" include, but are not limited to computer software, standards, specifications, engineering drawings and associated lists, process sheets, manuals, technical reports, catalog item identifications, and related information, but do not include financial reports, cost analyses, or other similar information used for performance or administration of the Contract.

1. The Federal Government reserves a royalty-free, non-exclusive and irrevocable license to reproduce, publish, or otherwise use, and to authorize others to use for "Federal Government Purposes," any subject data or copyright described below. For "Federal Government Purposes," means use only for the direct purposes of the Federal Government. Without the copyright owner's consent, the Federal Government may not extend its Federal license to any other party.
    a. Any subject data developed under the Contract, whether or not a copyright has been obtained;
    b. and Any rights of copyright purchased by the Contractor using Federal assistance in whole or in part by the FTA.
2. Unless FTA determines otherwise, the Contractor performing experimental, developmental, or research work required as part of this Contract agrees to permit FTA to make available to the public, either FTA's license in the copyright to any subject data developed in the course of the Contract, or a copy of the subject data first produced under the Contract for which a copyright has not been obtained. If the experimental, developmental, or research work, which is the subject of this Contract, is not completed for any reason whatsoever, all data developed under the Contract shall become subject data as defined herein and shall be delivered as the Federal Government may direct.
3. Unless prohibited by state law, upon request by the Federal Government, the Contractor agrees to indemnify, save, and hold harmless the Federal Government, its officers, agents, and

employees acting within the scope of their official duties against any liability, including costs and expenses, resulting from any willful or intentional violation by the Contractor of proprietary rights, copyrights, or right of privacy, arising out of the publication, translation, reproduction, delivery, use, or disposition of any data furnished under that contract. The Contractor shall be required to indemnify the Federal Government for any such liability arising out of the wrongful act of any employee, official, or agents of the Federal Government.

4. Nothing contained in this clause on rights in data shall imply a license to the Federal Government under any patent or be construed as affecting the scope of any license or other right otherwise granted to the Federal Government under any patent.
5. Data developed by the Contractor and financed entirely without using Federal assistance provided by the Federal Government that has been incorporated into work required by the underlying Contract is exempt from the requirements herein, provided that the Contractor identifies those data in writing at the time of delivery of the Contract work.
6. The Contractor agrees to include these requirements in each subcontract for experimental, developmental, or research work financed in whole or in part with Federal assistance.

ARTICLE 17 - PRE-AWARD AND POST-DELIVERY AUDITS OF ROLLING STOCK PURCHASES – NOT APPLICABLE TO THIS SOLICITATION

ARTICLE 18 - PROGRAM FRAUD AND FALSE OR FRAUDULENT STATEMENTS AND RELATED ACTS - Applies to All Procurements, 49 U.S.C. § 5323(l) (1), 31 U.S.C. §§ 3801-3812, 18 U.S.C. § 1001, 49 C.F.R. part 31

The Contractor acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. § 3801 et seq. and U.S. DOT regulations, "Program Fraud Civil Remedies," 49 C.F.R. part 31, apply to its actions pertaining to this Project. Upon execution of the underlying contract, the Contractor certifies or affirms the truthfulness and accuracy of any statement it has made, it makes, it may make, or causes to be made, pertaining to the underlying contract or the FTA assisted project for which this contract work is being performed. In addition to other penalties that may be applicable, the Contractor further acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification, the Federal Government reserves the right to impose the penalties of the Program Fraud Civil Remedies Act of 1986 on the Contractor to the extent the Federal Government deems appropriate.

The Contractor also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal Government under a contract connected with a project that is financed in whole or in part with Federal assistance originally awarded by FTA under the authority of 49 U.S.C. chapter 53, the Government reserves the right to impose the penalties of 18 U.S.C. § 1001 and 49 U.S.C. § 5323(l) on the Contractor, to the extent the Federal Government deems appropriate.

The Contractor agrees to include the above two clauses in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clauses shall not be modified, except to identify the subcontractor who will be subject to the provisions.

ARTICLE 19 - PUBLIC TRANSPORTATION EMPLOYEE PROTECTIVE ARRANGEMENTS – NOT APPLICABLE TO THIS SOLICITATION

ARTICLE 20 - RECYCLED PRODUCTS - Applies to Operations/Management/Subrecipients; Construction; Materials and Supplies Procurements - EPA Selected Items >$10,000 Annually, 42 U.S.C. § 6962, 40 C.F.R. part 247, 2 C.F.R. part § 200.322

Recovered Materials the Contractor agrees to provide a preference for those products and services that conserve natural resources, protect the environment, and are energy efficient by complying with and facilitating compliance with Section 6002 of the Resource Conservation and Recovery Act, as amended,

42 U.S.C. § 6962, and U.S. Environmental Protection Agency (U.S. EPA), "Comprehensive Procurement Guideline for Products Containing Recovered Materials," 40 C.F.R. part 247.

ARTICLE 21 - SAFE OPERATION OF MOTOR VEHICLES - 23 U.S.C. part 402, Executive Order No. 13043 Executive Order No. 13513, U.S. DOT Order No. 3902.10

Seat Belt Use

The Contractor is encouraged to adopt and promote on-the-job seat belt use policies and programs for its employees and other personnel that operate company-owned vehicles, company- A-60 rented vehicles, or personally operated vehicles. The terms "company-owned" and "company-leased" refer to vehicles owned or leased either by the Contractor or CITY.

Distracted Driving

The Contractor agrees to adopt and enforce workplace safety policies to decrease crashes caused by distracted drivers, including policies to ban text messaging while using an electronic device supplied by an employer, and driving a vehicle the driver owns or rents, a vehicle Contactor owns, leases, or rents, or a privately-owned vehicle when on official business in connection with the work performed under this agreement.

ARTICLE 22 - SCHOOL BUS OPERATIONS – NOT APPLICABLE TO THIS SOLICITATION

ARTICLE 23 - SEISMIC SAFETY - Professional Services - A&E & Construction for new buildings & additions, 42 U.S.C. 7701 et seq., 49 C.F.R. part 41, Executive Order (E.O.) 12699

The contractor agrees that any new building or addition to an existing building will be designed and constructed in accordance with the standards for Seismic Safety required in Department of Transportation (DOT) Seismic Safety Regulations 49 C.F.R. part 41 and will certify to compliance to the extent required by the regulation. The contractor also agrees to ensure that all work performed under this contract, including work performed by a subcontractor, is in compliance with the standards required by the Seismic Safety regulations and the certification of compliance issued on the project.

ARTICLE 24 - SUBSTANCE ABUSE REQUIREMENTS – NOT APPLICABLE TO THIS SOLICITATION

ARTICLE 25 - TERMINATION - Applies to all contracts >$10,000 if 49 CFR part 18 applies, 2 C.F.R. § 200.339, 2 C.F.R. part 200, Appendix II (B)

Termination for Convenience (General Provision)

The CITY may terminate this contract, in whole or in part, at any time by written notice to the Contractor when it is in the CITY's best interest. The Contractor shall be paid its costs, including contract close-out costs, and profit on work performed up to the time of termination. The Contractor shall promptly submit its termination claim to CITY to be paid the Contractor. If the Contractor has any property in its possession belonging to CITY, the Contractor will account for the same, and dispose of it in the manner CITY directs.

Termination for Default [Breach or Cause] (General Provision)

If the Contractor does not deliver supplies in accordance with the contract delivery schedule, or if the contract is for services, the Contractor fails to perform in the manner called for in the contract, or if the Contractor fails to comply with any other provisions of the contract, the CITY may terminate this contract for default. Termination shall be effected by serving a Notice of Termination on the Contractor setting forth the manner in which the Contractor is in default. The Contractor will be paid only the contract price for supplies delivered and accepted, or services performed in accordance with the manner of performance set forth in the contract.

If it is later determined by the CITY that the Contractor had an excusable reason for not performing, such as a strike, fire, or flood, events which are not the fault of or are beyond the control of the Contractor, the

CITY, after setting up a new delivery of performance schedule, may allow the Contractor to continue work, or treat the termination as a Termination for Convenience.

Opportunity to Cure (General Provision)

The CITY, in its sole discretion may, in the case of a termination for breach or default, allow the Contractor [an appropriately short period of time] in which to cure the defect. In such case, the Notice of Termination will state the time period in which cure is permitted and other appropriate conditions.

If Contractor fails to remedy to CITY's satisfaction the breach or default of any of the terms, covenants, or conditions of this Contract within [10 days] after receipt by Contractor of written notice from WR setting forth the nature of said breach or default, CITY shall have the right to terminate the contract without any further obligation to Contractor. Any such termination for default shall not in any way operate to preclude CITY from also pursuing all available remedies against Contractor and its sureties for said breach or default.

Waiver of Remedies for any Breach

In the event that CITY elects to waive its remedies for any breach by Contractor of any covenant, term or condition of this contract, such waiver by CITY shall not limit CITY's remedies for any succeeding breach of that or of any other covenant, term, or condition of this contract.

Termination for Convenience (Professional or Transit Service Contracts)

The CITY, by written notice, may terminate this contract, in whole or in part, when it is in the CITY's interest. If this contract is terminated, the CITY shall be liable only for payment under the payment provisions of this contract for services rendered before the effective date of termination.

Termination for Default (Supplies and Service)

If the Contractor fails to deliver supplies or to perform the services within the time specified in this contract or any extension, or if the Contractor fails to comply with any other provisions of this contract, the CITY may terminate this contract for default. The CITY shall terminate by delivering to the Contractor a Notice of Termination specifying the nature of the default. The Contractor will only be paid the contract price for supplies delivered and accepted, or services performed in accordance with the manner or performance set forth in this contract.

If, after termination for failure to fulfill contract obligations, it is determined that the Contractor was not in default, the rights and obligations of the parties shall be the same as if the termination had been issued for the convenience of the CITY.

Termination for Default (Transportation Services)

If the Contractor fails to pick up the commodities or to perform the services, including delivery services, within the time specified in this contract or any extension, or if the Contractor fails to comply with any other provisions of this contract, the CITY may terminate this contract for default. The CITY shall terminate by delivering to the Contractor a Notice of Termination specifying the nature of default. The Contractor will only be paid the contract price for services performed in accordance with the manner of performance set forth in this contract.

If this contract is terminated while the Contractor has possession of CITY goods, the Contractor shall, upon direction of the CITY, protect and preserve the goods until surrendered to the CITY or its agent. The Contractor and CITY shall agree on payment for the preservation and protection of goods. Failure to agree on an amount will be resolved under the Dispute clause.

If, after termination for failure to fulfill contract obligations, it is determined that the Contractor was not in default, the rights and obligations of the parties shall be the same as if the termination had been issued for the convenience of the CITY.

Termination for Default (Construction)

If the Contractor refuses or fails to prosecute the work or any separable part, with the diligence that will ensure its completion within the time specified in this contract or any extension or fails to complete the work within this time, or if the Contractor fails to comply with any other provision of this contract, CITY may terminate this contract for default. The CITY shall terminate by delivering to the Contractor a Notice of Termination specifying the nature of the default. In this event, the CITY may take over the work and compete it by contract or otherwise, and may take possession of and use any materials, appliances, and plant on the work site necessary for completing the work. The Contractor and its sureties shall be liable for any damage to the CITY resulting from the Contractor's refusal or failure to complete the work within specified time, whether or not the Contractor's right to proceed with the work is terminated. This liability includes any increased costs incurred by the CITY in completing the work.

The Contractor's right to proceed shall not be terminated nor shall the Contractor be charged with damages under this clause if:

1. The delay in completing the work arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor. Examples of such causes include: acts of God, acts of CITY, acts of another contractor in the performance of a contract with CITY, epidemics, quarantine restrictions, strikes, freight embargoes; and
2. The Contractor, within [10] days from the beginning of any delay, notifies CITY in writing of the causes of delay. If, in the judgment of CITY, the delay is excusable, the time for completing the work shall be extended. The judgment of CITY shall be final and conclusive for the parties, but subject to appeal under the Disputes clause(s) of this contract.
3. If, after termination of the Contractor's right to proceed, it is determined that the Contractor was not in default, or that the delay was excusable, the rights and obligations of the parties will be the same as if the termination had been issued for the convenience of CITY.

Termination for Convenience or Default (Architect and Engineering)

The CITY may terminate this contract in whole or in part, for the CITY's convenience or because of the failure of the Contractor to fulfill the contract obligations. The CITY shall terminate by delivering to the Contractor a Notice of Termination specifying the nature, extent, and effective date of the termination. Upon receipt of the notice, the Contractor shall (1) immediately discontinue all services affected (unless the notice directs otherwise), and (2) deliver to the CITY's Contracting Officer all data, drawings, specifications, reports, estimates, summaries, and other information and materials accumulated in performing this contract, whether completed or in process. CITY has a royalty-free, nonexclusive, and irrevocable license to reproduce, publish or otherwise use, all such data, drawings, specifications, reports, estimates, summaries, and other information and materials.

If the termination is for the convenience of the CITY, the CITY's Contracting Officer shall make an equitable adjustment in the contract price but shall allow no anticipated profit on unperformed services.

If the termination is for failure of the Contractor to fulfill the contract obligations, the CITY may complete the work by contact or otherwise and the Contractor shall be liable for any additional cost incurred by the CITY.

If, after termination for failure to fulfill contract obligations, it is determined that the Contractor was not in default, the rights and obligations of the parties shall be the same as if the termination had been issued for the convenience of CITY.

Termination for Convenience or Default (Cost-Type Contracts)

The CITY may terminate this contract, or any portion of it, by serving a Notice of Termination on the Contractor. The notice shall state whether the termination is for convenience of CITY or for the default of the Contractor. If the termination is for default, the notice shall state the manner in which the Contractor has failed to perform the requirements of the contract. The Contractor shall account for any property in its

possession paid for from funds received from the CITY, or property supplied to the Contractor by the CITY. If the termination is for default, the CITY may fix the fee, if the contract provides for a fee, to be paid the Contractor in proportion to the value, if any, of work performed up to the time of termination. The Contractor shall promptly submit its termination claim to the CITY and the parties shall negotiate the termination settlement to be paid the Contractor.

If the termination is for the convenience of CITY, the Contractor shall be paid its contract close-out costs, and a fee, if the contract provided for payment of a fee, in proportion to the work performed up to the time of termination. If, after serving a Notice of Termination for Default, the CITY determines that the Contractor has an excusable reason for not performing, the CITY, after setting up a new work schedule, may allow the Contractor to continue work, or treat the termination as a Termination for Convenience.

ARTICLE 26 - VIOLATION AND BREACH OF CONTRACT - Applies to all Contracts >$250,000, 2 C.F.R. § 200.3262 C.F.R. part 200, Appendix II (A), Rights and Remedies of the CITY

The CITY shall have the following rights in the event that the CITY deems the Contractor guilty of a breach of any term under the Contract.

1. The right to take over and complete the work or any part thereof as agency for and at the expense of the Contractor, either directly or through other contractors.
2. The right to cancel this Contract as to any or all of the work yet to be performed.
3. The right to specific performance, an injunction or any other appropriate equitable remedy.
4. The right to money damages.

Rights and Remedies of Contractor

Inasmuch as the Contractor can be adequately compensated by money damages for any breach of this Contract, which may be committed by the CITY, the Contractor expressly agrees that no default, act or omission of the CITY shall constitute a material breach of this Contract, entitling Contractor to cancel or rescind the Contract (unless the CITY directs Contractor to do so) or to suspend or abandon performance.

Remedies

Substantial failure of the Contractor to complete the Project in accordance with the terms of this Agreement will be a default of this Agreement. In the event of a default, the CITY will have all remedies in law and equity, including the right to specific performance, without further assistance, and the rights to termination or suspension as provided herein. The Contractor recognizes that in the event of a breach of this Agreement by the Contractor before the CITY takes action contemplated herein, the CITY will provide the Contractor with sixty (60) days written notice that the CITY considers that such a breach has occurred and will provide the Contractor a reasonable period of time to respond and to take necessary corrective action.

Disputes

Example 1: Disputes arising in the performance of this Contract that are not resolved by agreement of the parties shall be decided in writing by the authorized representative of CITY. This decision shall be final and conclusive unless within [10] days from the date of receipt of its copy, the Contractor mails or otherwise furnishes a written appeal to the [title of employee]. In connection with any such appeal, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its position. The decision of the CITY shall be binding upon the Contractor and the Contractor shall abide be the decision.

Example 2: The CITY and the Contractor intend to resolve all disputes under this Agreement to the best of their abilities in an informal manner. To accomplish this end, the parties will use an Alternative Dispute Resolution process to resolve disputes in a manner designed to avoid litigation. In general, the parties contemplate that the Alternative Dispute Resolution process will include, at a minimum, an attempt to resolve disputes through communications between their staffs, and, if resolution is not reached at that level,

a procedure for review and action on such disputes by appropriate management level officials within the CITY and the Contractor's organization.

In the event that a resolution of the dispute is not mutually agreed upon, the parties can agree to mediate the dispute or proceed with litigation. Notwithstanding any provision of this section, or any other provision of this Contract, it is expressly agreed and understood that any court proceeding arising out of a dispute under the Contract shall be heard by a Court de novo and the court shall not be limited in such proceeding to the issue of whether the Authority acted in an arbitrary, capricious or grossly erroneous manner.

Pending final settlement of any dispute, the parties shall proceed diligently with the performance of the Contract, and in accordance with the CITY's direction or decisions made thereof.

Performance during Dispute

Unless otherwise directed by CITY, Contractor shall continue performance under this Contract while matters in dispute are being resolved.

Claims for Damages

Should either party to the Contract suffer injury or damage to person or property because of any act or omission of the party or of any of its employees, agents or others for whose acts it is legally liable, a claim for damages therefor shall be made in writing to such other party within a reasonable time after the first observance of such injury or damage.

Remedies

Unless this Contract provides otherwise, all claims, counterclaims, disputes and other matters in question between the CITY and the Contractor arising out of or relating to this agreement or its breach will be decided by arbitration if the parties mutually agree, or in a court of competent jurisdiction within the State in which the CITY is located.

Rights and Remedies

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. No action or failure to act by the CITY or Contractor shall constitute a waiver of any right or duty afforded any of them under the Contract, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

ARTICLE 27 - FEDERAL CHANGES - Applies to all Contracts, 49 CFR Part 18

Federal Changes - Contractor shall at all times comply with all applicable FTA regulations, policies, procedures and directives, including without limitation those listed directly or by reference in the Master Agreement between Purchaser and FTA, as they may be amended or promulgated from time to time during the term of this contract. Contractor's failure to so comply shall constitute a material breach of this contract.

ARTICLE 28 - INCORPORATION OF FEDERAL TRANSIT ADMINISTRATION (FTA) TERMS - Applies to all Contracts

Incorporation of Federal Transit Administration (FTA) Terms - The preceding provisions include, in part, certain Standard Terms and Conditions required by DOT, whether or not expressly set forth in the preceding contract provisions. All contractual provisions required by DOT, as set forth in FTA Circular 4220.1.F are hereby incorporated by reference. Anything to the contrary herein notwithstanding, all FTA mandated terms shall be deemed to control in the event of a conflict with other provisions contained in this Agreement. The Contractor shall not perform any act, fail to perform any act, or refuse to comply with any the CITY requests which would cause the CITY to be in violation of the FTA terms and conditions.

ARTICLE 29 - AMERICANS WITH DISABILITIES ACT (ADA) - Applies to All A&E; Operations/Management/Subrecipients; Rolling Stock; Construction; Materials and Supplies Contracts

ADA Access - This requirement applies to contracts for Architectural and Engineering Services. The contractor agrees to comply with the requirements of 49 U.S.C. § 5301 (d), which states the Federal policy that the elderly and persons with disabilities have the same right as other persons to use mass transportation service and facilities, and that special efforts shall be made in planning and designing those services and facilities to implement that policy. The contractor also agrees to comply with all applicable requirements of section 504 of the Rehabilitation Act of 1973, as amended, 29 U.S.C. § 794, which prohibits discrimination on the basis of handicaps, with the Americans with Disabilities Act of 1990 (ADA), as amended, 42 U.S.C. §§ 12101 et seq., which requires that accessible facilities and services be made available to persons with disabilities, including any subsequent amendments to that Act, and with the Architectural Barriers act of 1968, as amended, 42 U.S.C. §§ 4151 et seq., which requires that buildings and public accommodations be accessible to persons with disabilities, including any subsequent amendments to that Act. In addition, the contractor agrees to comply with any and all applicable requirements issued by the FTA, DOT, DOJ, U.S. GSA, U.S. EEOC, U.S. FCC, any subsequent amendments thereto and any other nondiscrimination statute(s) that may apply to the Project.

ARTICLE 30 - CONFORMANCE WITH ITS NATIONAL ARCHITECTURE – NOT APPLICABLE TO THIS SOLICITATION

ARTICLE 31 - DAVIS-BACON AND COPELAND ANTI-KICKBACK ACTS - Applies to Construction Contracts Valued over $2,000

31.1 Minimum wages

31.1.1 All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 31.1.4 of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Part 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classifications and wage rates conformed under paragraph 31.1.2 of this section and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

31.1.2

31.1.2.1 The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

1. Except with respect to helpers as defined as 29 CFR 5.2(n)(4), the work to be performed by the classification requested is not performed by a classification in the wage determination.
2. The classification is utilized in the area by the construction industry.
3. The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.
4. With respect to helpers as defined in 29 CFR 5.2(n)(4), such a classification prevails in the area in which the work is performed.

31.1.2.2 If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

31.1.2.3 In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

31.1.2.4 The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 31.1.2.2 or 31.1.2.3 of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

31.1.3 Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

31.1.4 If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

31.1.5

31.1.5.1 The contracting officer shall require that any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefor only when the following criteria have been met:

1. The work to be performed by the classification requested is not performed by a classification in the wage determination; and
2. The classification is utilized in the area by the construction industry; and
3. The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

31.1.5.2 If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

31.1.5.3 In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination with 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

31.1.5.4 The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 31.1.5.2 or 31.1.5.3 of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

31.2 **Withholding** - The Worcester Redevelopment Authority shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract, the Worcester Redevelopment Authority may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

31.3 Payrolls and basic records

31.3.1 Payroll and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described

in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

31.3.2

31.3.2.1 The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Worcester Redevelopment Authority for transmission to the Federal Transit Administration. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under section 5.5(a)(3)(i) of Regulations, 29 CFR part 5. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, DC 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

31.3.2.2 Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

1. That the payroll for the payroll period contains the information required to be maintained under section 5.5(a)(3)(i) of Regulations, 29 CFR part 5 and that such information is correct and complete;

2. That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

3. That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

31.3.2.3 The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 31.3.2.2 of this section.

31.3.2.4 The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

31.3.3 The contractor or subcontractor shall make the records required under paragraph 31.3.1 of this section available for inspection, copying, or transcription by authorized representatives of the Federal Transit Administration or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

31.4 Apprentices and Trainees

31.4.1 Apprentices - Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator of the Wage and Hour Division of the U.S. Department of Labor determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

31.4.2 Trainees - Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program,

the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

31.4.3 Equal employment opportunity - The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

31.5 **Compliance with Copeland Act requirements** - The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

31.6 **Subcontracts** - The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the Federal Transit Administration may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

31.7 **Contract termination: debarment** - A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

31.8 **Compliance with Davis-Bacon and Related Act requirements** - All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

31.9 **Disputes concerning labor standards** - Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

31.10 **Certificate of eligibility**

31.10.1 By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

31.10.2 No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

31.10.3 The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

ARTICLE 32 - **VETERANS HIRING PREFERENCE -** 49 U.S.C. 5325(k) et seq., *Applies to Construction Contracts >$150,000*

Veterans Employment - CITYs and sub-CITYs of Federal financial assistance under this chapter shall ensure that contractors working on a capital project funded using such assistance give a hiring preference, to the extent practicable, to veterans (as defined in section 2108 of title 5) who have the requisite skills and abilities to perform the construction work required under the contract. This subsection shall not be understood, construed or enforced in any manner that would require an employer to give a preference to any veteran over any equally qualified applicant who is a member of any racial or ethnic minority, female, an individual with a disability, or a former employee.

ARTICLE 33 - NOTICE TO FTA AND U.S. DOT INSPECTOR GENERAL OF INFORMATION RELATED TO FRAUD, WASTE, ABUSE, OR OTHER LEGAL MATTERS - Applies to All Contracts in excess of $25,000, FTA Master Agreement §39(b)

If a current or prospective legal matter that may affect the Federal Government emerges, the Contractor must promptly notify the Worcester Redevelopment Authority (CITY), which will promptly notify the FTA Chief Counsel and FTA Regional Counsel for the Region in which the CITY is located. The Contractor must include an equivalent provision in its sub-agreements at every tier, for any agreement that is a "covered transaction" according to 2 C.F.R. §§ 180.220 and 1200.220.

1. The types of legal matters that require notification include, but are not limited to, a major dispute, breach, default, litigation, or naming the Federal Government as a party to litigation or a legal disagreement in any forum for any reason.
2. Matters that may affect the Federal Government include, but are not limited to, the Federal Government's interests in the Award, the accompanying Underlying Agreement between the FTA and the CITY, and any Amendments thereto, or the Federal Government's administration or enforcement of federal laws, regulations, and requirements.

Additional Notice to U.S. DOT Inspector General. The Contractor must promptly notify the CITY, which will promptly notify the U.S. DOT Inspector General in addition to the FTA Chief Counsel or Regional Counsel for the Region in which the CITY is located, if the Contractor has knowledge of potential fraud, waste, or abuse occurring on a Project receiving assistance from FTA. The notification provision applies if a person has or may have submitted a false claim under the False Claims Act, 31 U.S.C. § 3729, et seq., or has or may have committed a criminal or civil violation of law pertaining to such matters as fraud, conflict of interest, bid rigging, misappropriation or embezzlement, bribery, gratuity, or similar misconduct involving federal assistance. This responsibility occurs whether the Project is subject to this Agreement or another agreement with the CITY involving a principal, officer, employee, agent, or Third-Party Participant of the Contractor. It also applies to subcontractors at any tier. Knowledge, as used in this paragraph, includes, but is not limited to, knowledge of a criminal or civil investigation by a Federal, state, or local law enforcement or other investigative agency, a criminal indictment or civil complaint, or probable cause that could support a criminal indictment, or any other credible information in the possession of the Contractor. In this paragraph, "promptly" means to refer information without delay and without change. This notification provision applies to all divisions of the Contractor, including divisions tasked with law enforcement or investigatory functions.

ARTICLE 34 - PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT - Applies to All Procurements, 2 CFR 200.216

The contractor is prohibited from obligating or expending Federal funds to:

34.1 Procure or obtain.

34.2 Extend or renew a contract to procure or obtain.

34.3 Enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that use covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115-232, section 889, "covered telecommunications equipment or services" is:

34.3.1 Telecommunications equipment provided by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities)

34.3.2 For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).

34.3.3 Telecommunications or video surveillance services provided by such entities or using such equipment.

34.3.4 Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

The contractor shall not provide covered telecommunications equipment or services in the performance of this contract.

EXHIBIT C
PAYMENT AND PERFORMANCE BOND

PAYMENT BOND

KNOW ALL BY THESE PRESENTS, that ***XXX*,** a Massachusetts corporation duly established by law and having a usual place of business at ***XXX*** as PRINCIPAL, and, ***XXX*,** a corporation organized under the laws of the **State of *XXX*** and duly authorized and admitted, under 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, an independent body politic and corporate organized under c.121B of the General Laws of Massachusetts with its principal office located at City Hall, 4th Floor, 455 Main Street, Worcester MA 01608, in the sum ***XXX*** 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 respective 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 ***XXX*** at Union Station, located at 2 Washington Square, Worcester, MA 01604, in the City of Worcester, Massachusetts.

NOW THEREFORE, the condition of this obligation is such that if the PRINCIPAL 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 SURETY 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 39F, as amended, then this obligation shall become null and void; otherwise it shall remain in full force and virtue.

IN TESTIMONY WHEREOF, the PRINCIPAL has hereunto caused its name and seal to be affixed, and the SURETY 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)
XXX

By:_____
XXX, XXX

(SURETY)_____(Seal)
XXX

_____
Attorney-in-fact

PERFORMANCE BOND

KNOW ALL BY THESE PRESENTS, that ***XXX*,** a Massachusetts corporation duly established by law and having a usual place of business at ***XXX*** as PRINCIPAL, and, ***XXX*,** a corporation organized under the laws of the **State of *XXX*** and duly authorized and admitted, under 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 an independent body politic and corporate organized under c.121B of the General Laws of Massachusetts with its principal office located at City Hall, 4th Floor, 455 Main Street, Worcester MA 01608 in the sum of ***XXX*** lawful money of the United States of America, to be paid to said 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 ***XXX*** at Union Station, located at 2 Washington Square, Worcester, MA 01604.

NOW THEREFORE, the condition of this obligation is such that if the said PRINCIPAL 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 SURETY, 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 there under, 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 of Worcester, under the provisions thereof, said SURETY hereby further agrees that it shall, if requested in writing by the City of Worcester, take such action as is necessary to complete said Agreement.

IN TESTIMONY WHEREOF, the PRINCIPAL has hereunto caused its name and seal to be affixed, and the SURETY 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.

(Surety)	(Seal)	(Principal)	(Seal)
XXX		***XXX***	
_____		_____	
Name:		***XXX***	
Attorney-in-Fact		***XXX***	

EXHIBIT D

CERTIFICATE OF VOTE OF AUTHORIZATION

CERTIFICATE OF VOTE OF AUTHORIZATION

Date: _____

I hereby certify that at a meeting of the Board of Directors of: _____duly called and held on the _____ day of_____, 2026, at which time

_____

Name Officer

of the _____ be and hereby is authorized to execute and deliver for and in behalf of the corporation, a contract with the _____ for _____in the City of Worcester and, as Principal to execute a Performance Bond and Labor and Materials Bond in connection therewith, which Contract and Bonds were presented to and made a part of the records of said meeting.

I further certify that _____is the duly qualified and acting _____of the Corporation and that said vote has not been repealed, rescinded or amended.

A true copy of the record,

ATTEST

_____

Clerk of the Corporation

(Corporate Seal)

Sworn to and subscribed to me this _____ day of _____, 2026.

_____

Notary Public

My Commission Expires:_____

EXHIBIT E

CERTIFICATE OF ACKNOWLEDGMENT OF CONTRACTOR IF A CORPORATION

CERTIFICATE OF ACKNOWLEDGMENT OF CONTRACTOR
IF A CORPORATION

for AGREEMENT

State of _____)
ss
County of _____)

On this _ day of _____, 2026, before

me personally came _____ to me known,

who being by me duly sworn, did depose and say as follows:

That he resides at _____

and is the _____

of _____

the corporation described in and which executed the foregoing instrument; that he knows the corporate seal of said corporation; that the seal affixed to the foregoing instrument is such corporate seal and it was so affixed by order of the Board of Directors of said corporation; and that by the like order he signed thereto his name and official designation.

_____(Seal)
Notary Public
My Commission Expires:_____

CERTIFICATE OF ACKNOWLEDGMENT OF CONTRACTOR IF A CORPORATION

FOR CONTRACT BONDS

State of _____)

ss

County of _____)

On this _____ day of _____, 2026,

before me personally came _____ to me

known, who being by me duly sworn, did depose and say as follows:

That he resides at _____

and is the _____

of _____

the corporation described in and which executed the foregoing instrument; that he knows the corporate seal of said corporation; that the seal affixed to the foregoing instrument is such corporate seal and it was so affixed by order of the Board of Directors of said corporation; and that by the like order he signed thereto his name and official designation.

_____(Seal)
Notary Public

My Commission Expires: _____

CITY OF WORCESTER

FORM OF SUBCONTRACT

(Revised 1/6/93)

CONTRACT

THIS AGREEMENT made this _____ day of _____, 20_____,

by and between _____
(a Corporation organized and existing under the laws of _____),
(a Partnership consisting of _____),
(an Individual doing business as _____),

hereinafter called the "Contractor",

and _____
(a Corporation organized and existing under the laws of _____),
(a Partnership consisting of _____),
(an Individual doing business as _____),

hereinafter called the "Subcontractor".

WITNESSETH, that the Contractor and the Subcontractor for the considerations hereafter named, agree as follows:

1. The Subcontractor agrees to furnish all labor and materials required for the completion of all work specified in Section No. _____ of the specifications for _____ _____ (Name of Sub-Trade) and the drawings referred to therein and addenda Nos. _____, _____, _____, and ___for the _____ _____ (complete title of the project and the project number taken from title page of the project manual) as prepared by Populous Architects, PC. 294 Washington Street, Suite 706, Boston MA 02108 for the sum of _____ ($ _____) and the Contractor agrees to pay the Subcontractor said sum of said work.

   a) The Subcontractor agrees to be bound to the Contractor by the terms of the hereinbefore described drawings, specifications (including all general conditions stated therein) and addenda Nos. __, _____, _____, and __, and to assume to the Contractor all the obligations and responsibilities that the Contractor by those documents assumes to _____(hereinafter called the "Awarding Authority"), except to the extent that provisions contained therein are by their terms or by law applicable only to the Contractor.

   b) The Contractor agrees to be bound to the Subcontractor by the terms of the hereinbefore described documents and to assume to the Subcontractor all the obligations and

responsibilities that the Awarding Authority, by the terms of the hereinbefore described documents, assumes to the Contractor, except to the extent that provisions contained therein are by their terms or by law applicable only to the Awarding Authority.

c) Anything contained herein to the contrary notwithstanding, to the fullest extent allowed by law, the Subcontractor shall indemnify and hold harmless the Contractor, Architect, and Awarding Authority, their 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 there from and (2) is caused in whole or in part by any negligent act or omission of the Subcontractor, anyone directly or indirectly employed by the Subcontractor, or anyone for whose acts the Subcontractor 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 provision.

2. The Contractor agrees to begin, prosecute and complete the entire work specified by the Awarding Authority in an orderly manner so that the Subcontractor will be able to begin, prosecute and complete the work described in this subcontract; and, in consideration thereof, upon notice from the Contractor, either oral or in writing, the Subcontractor agrees to begin, prosecute and complete the work described in this Subcontract in an orderly manner and with due consideration to the date or time specified by the Awarding Authority for the completion of the entire work.

3. The Subcontractor agrees to furnish to the Contractor within a reasonable time after the execution of this subcontract, evidence of workmen's compensation insurance as required by law and evidence of public liability and property damage insurance of the type and in limits required to be furnished to the Awarding Authority by the Contractor.

4. The Contractor agrees that no claim for services rendered or materials furnished by the Contractor to the Subcontractor shall be valid unless written notice thereof is given by the Contractor to the Subcontractor during the first ten (10) days of the calendar month following that in which the claim originated.

5. This agreement is contingent upon the execution of a general contract between the Contractor and the Awarding Authority for the complete work.

6. The Contractor shall comply and facilitate compliance with U.S. DOT regulations, "Non-procurement Suspension and Debarment," 2 C.F.R. part 1200, which adopts and supplements the U.S. Office of Management and Budget (U.S. OMB) "Guidelines to Agencies on Governmentwide Debarment and Suspension (Non-procurement)," 2 C.F.R. part 180. These provisions apply to each contract at any tier of $25,000 or more, and to each contract at any tier for a federally required audit (irrespective of the contract amount), and to each contract at any tier that must be approved by an FTA official irrespective of the contract amount. As such, the Contractor shall verify that its principals, affiliates, and subcontractors are eligible to participate in this federally funded contract and are not presently declared by any Federal department or agency to be:

   1. Debarred from participation in any federally assisted Award.
   2. Suspended from participation in any federally assisted Award.

3. Proposed for debarment from participation in any federally assisted Award.
4. Declared ineligible to participate in any federally assisted Award.
5. Voluntarily excluded from participation in any federally assisted Award.
6. Disqualified from participation in any federally assisted Award.

By signing and submitting its bid or proposal, the bidder or proposer certifies as follows:

The certification in this clause is a material representation of fact relied upon by the CITY. If it is later determined by the CITY that the bidder or proposer knowingly rendered an erroneous certification, in addition to remedies available to the CITY, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment. The bidder or proposer agrees to comply with the requirements of 2 C.F.R. part 180, subpart C, as supplemented by 2 C.F.R. part 1200, while this offer is valid and throughout the period of any contract that may arise from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

7. The CITY and Contractor acknowledge and agree that, notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of the underlying Contract, absent the express written consent by the Federal Government, the Federal Government is not a party to this Contract and shall not be subject to any obligations or liabilities to the CITY, Contractor or any other party (whether or not a party to that contract) pertaining to any matter resulting from the underlying Contract.

8. The Contractor acknowledges that the provisions of the Program Fraud Civil Remedies Act of 1986, as amended, 31 U.S.C. § 3801 et seq. and U.S. DOT regulations, "Program Fraud Civil Remedies," 49 C.F.R. part 31, apply to its actions pertaining to this Project. Upon execution of the underlying contract, the Contractor certifies or affirms the truthfulness and accuracy of any statement it has made, it makes, it may make, or causes to be made, pertaining to the underlying contract or the FTA assisted project for which this contract work is being performed. In addition to other penalties that may be applicable, the Contractor further acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification, the Federal Government reserves the right to impose the penalties of the Program Fraud Civil Remedies Act of 1986 on the Contractor to the extent the Federal Government deems appropriate.

   The Contractor also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal Government under a contract connected with a project that is financed in whole or in part with Federal assistance originally awarded by FTA under the authority of 49 U.S.C. chapter 53, the Government reserves the right to impose the penalties of 18 U.S.C. § 1001 and 49 U.S.C. § 5323(l) on the Contractor, to the extent the Federal Government deems appropriate.

[remainder of page intentionally blank/signature page to follow]

IN WITNESS WHEREOF, the parties hereto have executed this agreement the day and year first above-written.

SEAL

ATTEST:

_____ _____
(Name of Subcontractor)

By:_____

SEAL

ATTEST:

_____ _____
(Name of Contractor)

By:_____

END OF SECTION

SECTION 00 80 00

PREVAILING WAGE RATES

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. All the Contract Documents, including Drawings, General Conditions, Supplementary Conditions, and all Sections of Division 01 - General Requirements, apply to the Work of this Section.

1.02 SUMMARY

A. This Section specifies the List of Jobs; Classifications; Determination of Rate of Wages; Schedule: as established under Statutory reference: M.G.L. Chapter 149, Section 26 and 27. These requirements apply to every contract or subcontract performing work on this public works project.

B. Related Sections: Sections which contain requirements that relate to this Section include, but are not limited to the following:

1. Section 00 15 00 – Instruction to Bidders
2. Section 01 23 00 - Alternates

C. 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 indicated in Supplementary Conditions section 00 30 00, 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 work who does not make payments to a health and welfare plan, a pension plan and 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.

D. "WEEKLY PAYROLL REPORTS" shall be required to be submitted consecutively, for each week from the start of work until the completion of his work, regardless of whether work was actually being performed on or off-site.

1. When work is not performed; indicate on the form the corresponding week ending dates and post "NO WORK PERFORMED" conspicuously on the front of said form.
2. Weekly reports shall be required until the contractor executes and furnishes to the City of Worcester, Purchasing Division, a "*Davis-Bacon and Related Acts Weekly Certified Payroll Form"* (included in Exhibit A to the Owner – Contractor Agreement) with box checked for "*Submission of Final DBRA Certified Payroll Form*". SUBMIT TO:

   City of Worcester, Purchasing Division, Room 201, 455 Main Street, Worcester, MA 01608, 508-799-1174, Or (preferably), Sent electronically to: certifiedpayrollrecords@worcesterma.gov.

1.03 SAMPLE FORMS

A. Form(s) are included in Exhibit A of the Owner Contractor Agreement. Final form and format shall be as approved by the Contract Compliance Office.

THE MASSACHUSETTS PREVAILING WAGE LAW

(MGL. c149, §§26-27H)

AN IMPORTANT GUIDE FOR CONTRACTORS DOING PUBLIC WORKS PROJECTS IN MASSACHUSETTS

PREVAILING WAGE SCHEDULES

Every contractor should obtain a schedule of prevailing wage rates for every public works project from the Awarding Authority (city, town, county, district, state agency or authority). It is the awarding authority's responsibility to ensure that a copy of the wage schedule is provided to all contractors from whom estimates or bids are solicited for all projects. The Department of Labor and Industries (DLl) will not issue wage schedules directly to contractors or employees.

Once a wage schedule has been issued for a project by DLI, it will remain in effect for the entire project. Appeals of wage determinations or classifications of employment may be made to the DLI commissioner.

A copy of the wage schedule is required to be posted at the work site.

A wage schedule issued for a project may not be used on any other project. If, by chance, an Awarding Authority fails to provide you with a wage schedule to use when figuring your bid, do not use one you may have from another project.

In this case, you should contact DLI immediately and urge the awarding authority to contact DLI to correct the oversight.

The failure of an Awarding Authority to provide a wage schedule does not excuse a contractor from paying the prevailing rate.

BIDDING

The Attorney General's Division of Fair Labor & Business Practices enforces the prevailing wage law. All bids must reflect prevailing wage rates. Contractors may be required by an Awarding Authority to "demonstrate ... how (they) could complete the project and comply with Mass. Gen. Laws." The Division issued an "Advisory" discussing these and other points. For a copy, please contact the Attorney General's Office.

PAYING EMPLOYEES

Prevailing wages must be paid to all employees on public works projects regardless of whether they are employed by the general contractor, a filed sub-bidder or any sub-contractor. The prevailing wage applies equally to unionized and non-unionized workers.

All employees who perform work on a public works project must be paid hourly according to the wage schedule issued for the particular project.

The wage schedule issued for each project is in effect for the duration of that project. All wage increases listed on the schedule must be paid on the specified dates.

Employers are limited in the deductions that can be made from the hourly rate (represented as the "total rate" on the wage schedules). Only contributions to the following plans may be deducted:

1 Health Plan

2 Pension

3 Supplementary Unemployment

All contributions must be made to bona fide plans.

If an employer contributes to any, or all, of the above plans, it may deduct the hourly amount contributed from the "total rate." If the employer does not contribute to any of the benefit plans listed above, then the employee's hourly rate of pay will be the "total rate" from the wage schedule.

All other deductions, including and not limited to the following," from the wage schedule.

All other deductions, including and not limited to the following, may not be subtracted from the employee's hourly wage rate:

1 Vacation Time

2 Sick Time

3 Training Funds

4 Charitable Contributions

5 Worker's Compensation

6 Unemployment Insurance

7 Uniforms

Overtime, which must be paid to all employees who work more than 40 hours per week, shall be at least time-and-one-half the base rate ("total rate" less benefits, if any).

Any "separate check" given to an employee as the "benefit portion" of the prevailing wage may not be treated differently than the check for "base wages." All "separate checks" are considered wages and subject to state and federal taxes, unemployment insurance, and worker's compensation requirements.

PAYROLL RECORDS

Employers are required to submit weekly-certified payroll reports to the Awarding Authority and keep them on file for three (3) years. A reporting form is sent along with each wage schedule that may be used. Each report must contain at least: the employee's name, address, occupational classification, hours worked and wages paid. Do not submit weekly payroll reports to DLI.

APPRENTICES

If your company employs apprentices, they must be registered with the Division of Apprentice Training. All persons not registered with DAT must be paid the "total rate" listed on the wage schedule. An apprentice sheet showing percentages based on the apprentice steps is included with all wage schedules.

PENALTIES

Failure to pay the prevailing wage subjects the contractor to potential civil and criminal liability.

Wage schedules are issued by:

MA Dept. of Labor & Industries

100 Cambridge St., 11th Fl.

Boston, MA 02202

(617) 727-3492

Enforcement is carried out by:

Office of the Attorney General,

Fair Labor & Business Practices Div.

100 Cambridge St., 11th Fl.

Boston, MA 02202

(617) 727-3477

PART 1 - PRODUCTS (Not Used)

PART 2 - EXECUTION (Not Used)

END OF SECTION

No General Bidder or Filed Sub-bidder will be eligible for a contract award unless the following certification has been completed and submitted to the Awarding Authority with its bid.

CITY OF WORCESTER
FORM OF
TAX PAYMENT CERTIFICATE

STATE LAW NOW MANDATES THAT TO DO BUSINESS WITH THE CITY OF WORCESTER the Massachusetts Revenue Enforcement and Protection Program of 1983 requires that the following be supplied with your Bid:

Date: _____

Pursuant to M.G.L. Chapter 62C, Section 49A, I certify under the Penalties of Perjury That I, To My Best Knowledge and Belief, Have Filed ALL Massachusetts State Tax Returns and Paid ALL Massachusetts State and City Taxes Required under Law.

Company Name: _____

Street and Number: _____

City or Town: _____

State: _____ Zip Code: _____

Telephone Number: _____

Social Security Number or Federal Identification Number: _____

Is Company Certified by State Office of Minority and Women Business Assistance (SOMWBA)?

Yes _____ Date of Certification: _____

No _____

Failure to complete this form may result in rejection of Bid and/or removal from City Bid Lists.

_____
BIDDER'S Authorized Signature

END OF SECTION

CORI COMPLIANCE / GENDER IDENTITY & EXPRESSION

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 www.worcesterma.gov. 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 508-799-1030.

CERTIFICATION

All Vendors must check one of the three lines 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.

3. _____ 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 signing quotation, bid or proposal) Signature

_____

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 www.worcesterma.gov or call the LGBTQ Liaison/Director of Human Rights & Disabilities at 508-799-8486.

STATE LAW MANDATES THAT TO DO BUSINESS WITH THE CITY OF WORCESTER the Massachusetts Revenue Enforcement and Protection Program of 1983 requires that the following be supplied with your bid:

DATE: _____

Pursuant to Mass. G.L. Ch. 62C, Section 49A, I certify under the penalties of perjury that I, to my best knowledge and belief, have filed all Massachusetts State Tax Returns and paid all Massachusetts State and City Taxes required under law.

COMPANY NAME: _____

STREET ADDRESS: _____

CITY OR TOWN: _____

STATE: _____ ZIP CODE: _____

TELEPHONE NO.: _____ FAX NO. _____

SOCIAL SECURITY OR FEDERAL IDENTIFICATION 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 http://www.mass.gov/ago/docs/workplace/wage/wagehourposter.pdf

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 shall 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.

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:_____ _____ _____

Print Name & Title **Company Name** **Date**

SECTION 01 01 00 - SUMMARY OF WORK

PART 1 – GENERAL

1.1 CONTRACT DOCUMENTS

A. The Contract Documents include the Drawings as enumerated on the Title Drawing, the general provisions of Contract, including General and Supplemental Conditions, and the provisions of this Project Manual and Addenda as a whole represent and describe the work and requirements of the Project.

1.2 GENERAL REQUIREMENTS

A. Attention is directed to the general and supplementary conditions and Division 1 including all sub-divisions therein attached in this document and drawings, which are made a part of this section.

1.3 SUBSTANTIAL COMPLETION

A. The Date of Substantial Completion shall be **120** calendar days from contract execution.

1. The Date of Substantial Completion shall remain the same, as stated above, regardless of any alternate(s) chosen to be included in the Contract by the Owner.

B. The Contractor shall obtain a Certificate of Occupancy on or before the Date of Substantial Completion.

1.4 PROJECT DESCRIPTION

A. The project scope generally includes deferred maintenance waterproofing and repairs, including but not limited to the following:

1. Installation of a new sump pit, pump and associated piping and alarm in the existing elevator pit.

2. Repairs to the garage structure (concrete, masonry, roofing).

3. Application of waterproofing and sealants.

4. Revision of portions of the existing sprinkler system.

5. Revision of the existing fire alarm system and electrical work associated with other work being performed.

B. The Work of this project shall be performed by the general contractor and filed subcontractors.

C. The Work of this project also includes the requirements in the Contract, the Sub-Contract(s), Sections 0 and Division 1 Sections, in their entirety.

1.5 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies; perform demolition work in accordance with applicable rules, regulations, codes, and ordinances of local, state and federal authorities.

B. Obtain and pay for necessary building permits, licenses and certificates and give notices as required during the performance of the Work.

C. Provide electronic copies of shop drawings and literature for Architects review and approval for the items referenced in the specifications.

D. Provide schedule and work plan within one week of the contract signing.

E. Attend weekly meetings (or as scheduled) with the Architect and Owner's Representative as scheduled.

F. Provide all Closeout documents including, final acceptance, warranties, guaranties and bonds.

1.6 RELATED WORK UNDER OTHER CONTRACTS

A. Work by other contractors, which will be under separate contract, may take place during the work of this contract adjacent to and within work areas of this site. This work, under other contract, shall be coordinated between the different General Contractors.

B. Cooperate fully with separate contractors so that work under those contracts may be carried out smoothly, without interfering with or delaying work under this contract.

1.7 WORK SEQUENCE SCHEDULING AND COORDINATION

A. The Work shall be sequenced, scheduled, and coordinated to achieve the Date of Substantial Completion.

1. All deliveries must be scheduled at a minimum of 48-hours in advance with the Architect and Owner.

2. All existing utility tie-in's must be scheduled and coordinated at a minimum of 72-hours in advance with the Architect and Owner.

B. The General Contractor and each Sub-Contractor shall establish and increase or decrease as appropriate the workforce, days of work, number of shifts, work hours, materials, tools and equipment needed to maintain and achieve the Date of Substantial Completion.

C. The General Contractor and each Sub-Contractor shall increase the workforce, days of work, number of shifts, work hours, materials, tools, and equipment needed to maintain the Date of Substantial Completion as necessary to accommodate any additional work authorized by Construction Change Directives and Change Orders modifications.

D. General Contractor will be responsible for the proper conduct of the work to ensure that all trades work together, and in harmony, to achieve substantial and final completion as specified.

1.8 WORK HOURS

A. Normal working hours are to be Monday through Friday from 7:00 AM to 3:30 PM, except Legal Holidays. Any working hours outside of these times shall be considered "Extended Hours" and treated as described below.

B. Extended work hours shall require prior scheduling and coordination with the Architect and Owner at a minimum of 48-hours in advance. Extended work hours on Sundays and Legal Holidays may also require a permit from the Police Department.

1. Upon permission from the Architect and Owner, and prior to the start of any extended work, pay for all fees and obtain through the City of Worcester Police Department a work permit for all Sundays and Legal Holidays.

C. The Contractor shall pay any overtime required for the City's Clerk of Works/Owner's Representative to be on site for any work performed outside of normal working hours as defined above. No work shall take place outside of normal working hours without prior approval and the City's Clerk of Works/Owner's Representative on site.

D. Any project related activities may not interfere with the enjoyment and use of abutting areas within the building or adjacent properties during any extended work hours.

1.9 CONTRACTOR USE OF THE PREMISES

A. General Contractor shall have use of the site from date of contract to the Date of Substantial Completion as described above in the Work Hours paragraph.

B. Construction vehicle access and deliveries to the project shall be made during working hours.

C. Do not close or obstruct the parking garage, driveways or sidewalks without the proper permit. Conduct operations with minimum traffic interference.

D. The General Contractor shall also be responsible for returning the public areas adjacent to each work area to their original state prior to the start of work in that area.

E. Generators and compressors, may be placed outside the building to provide power to equipment. Placement of any alternate power sources shall be subject to prior Architect and Owner approval.

F. There will be no washing or washing out of any vehicles at the project site. The contractor shall make necessary provisions to accommodate this work off site.

G. All cleaning and wash-down of tools and/or equipment shall be performed in areas designated only by the Architect. This will be strictly enforced.

1.10 CONTRACTOR USE OF CITY STREETS

A. The General Contractor's personnel, and all other personnel employed on the project, shall limit their parking on the site to within the areas designated for construction parking and as permitted by the Owner. Additionally, Contractor personnel may park as legally allowed within City Limits. Parking on street sidewalks is prohibited.

B. Driveway entrances, walks, and yards to abutting properties shall be kept unobstructed at all times.

1.11 WORK CONDITIONS

A. Neither the General Contractor, nor Sub-Contractors at any level, nor their employees shall bring illegal substances or alcoholic beverages on the premises.

B. Vulgar, abusive, obscene language or behavior will not be tolerated.

C. Contractor's personnel engaging in the above shall be removed from the job-site.

D. Radios or any type of “music” broadcasting systems are not allowed.

E. This site is smoke-free; therefore smoking is prohibited within the site limits.

1.12 SAFETY REGULATIONS

A. This project is subject to compliance with Public Law 91 596 “Occupational Safety and Health Act” latest edition (OSHA 29 CFR 1926), with respect to all rules and regulations pertaining to construction, including Volume 36, numbers 75 and 105, of the Federal Register, as amended, and as published by the U.S. Department of Labor.

B. Hazardous Waste Generation: Any work generating Hazardous or so-called Universal Wastes will comply with all requirements of 310 CMR 30.000. The proper storage, use and disposal of any hazardous chemicals or substances brought on site by the Contractor are the responsibility of the Contractor. The Owner will not be responsible or any hazardous materials left on site, the cost to remove these materials will be the Contractor's responsibility. All Hazardous wastes generated as a result of demolition and remodeling shall be contained, collected, segregated, labeled per all applicable federal EPA, Massachusetts DEP, Federal DOT regulations or other applicable local, state, or federal hazardous waste regulations, pending the appropriate disposition.

1.13 OSHA SAFETY AND HEALTH COURSE DOCUMENTAION

A. OSHA Safety and Health Course Documentation Records: Chapter 306 of the Massachusetts Acts of 2004 requires that everyone employed at the jobsite must complete a minimum 10-hour long course in construction safety and health approved by the U.S. Occupational Safety and Health Administration (OSHA) prior to working at the jobsite. Compliance is required of Prime Contractors’ and Subcontractors’ on-site employees at all levels whether stationed in the trailer or working in the field. Unless the Massachusetts Attorney General’s office indicates otherwise, this requirement does not apply to home-office employees visiting the site or to suppliers’ employees who are making deliveries.

B. OSHA 10 cards for anyone working on site are to be submitted prior to the first requisition.

C. Documentation records shall be initially compiled by the Prime Contractor and Subcontractors, and the Prime Contractor shall create and maintain a copy of the documentation on site at all times.

1.14 ASBESTOS AND HAZARDOUS MATERIALS DISCOVERY

A. Hazardous materials testing has been performed for the materials to be impacted by the Work, and no components have tested positive for the presence of lead paint and asbestos. Testing reports are attached to this project manual as Appendix 1.

B. If unanticipated asbestos-containing materials or other Hazardous Materials not included in Contract are discovered at any time during the course of work, the Prime Contractor shall cease work in the affected areas only and continue work in other areas, at the same time notify the Designer of such discovery. Do not proceed with work in such affected areas until written instructions are received. If removal is required, payment will be made in accordance with the contract unit prices bid for each respective material. In the absence of unit prices, cost shall be negotiated or otherwise established prior to commencement of removal, in accordance with provisions of the Contract.

C. The Owner or Designer will work with the Contractor to initiate removal or encapsulation of the asbestos. An extension of the completion date may be granted equal to the time lost. Proper notification must be made to the MADEP through the ANF-001 form, and the Owner.

1.15 PROJECT MANAGER, SUPERINTENDENTS, FIELD ENGINEER AND FOREMAN

A. The General Contractor shall provide a qualified General Superintendent, who shall be present, full time, on site daily during all work in progress until the Date of Substantial Completion, and for such additional time thereafter as the Architect may determine. Only under extenuating circumstances, with the approval of the Architect and Owner, will the Contractor be allowed to substitute for the General Superintendent prior to the date of Final Completion.

B. The General Superintendent shall supervise and direct the activities of other superintendents and foremen on site. He shall not perform the work of foremen, tradesmen, or home office staff.

C. Each filed sub-bidder and each subcontractor shall provide a Lead Foreman, responsible to be on site full time during the workday.

D. Each foreman, in addition to his regular duties shall be responsible for establishing, maintaining, and providing record drawings, which are required to be updated prior to submitting the current period’s draft Application for Payment.

E. The General Superintendent and Lead Foreman shall not be discharged or changed without prior written consent of the Architect, which will not be unreasonably withheld. The Architect will require that all as-built information be updated and current prior to granting consent.

1.16 DAILY REPORTS AND WEEKLY OUTLINE SCHEDULE

A. The General Superintendent shall provide a "Daily Report" to the Clerk of Works containing the following:

1. Name and manpower of each Contractor, filed Sub-Contractor and Sub Contractor.

2. Equipment used.

3. Delivery of products received on site.

4. Weather conditions at start and end of each day and any significant changes or events during the day.

5. Significant problems, hazards or accidental injury occurring during each shift.

6. Summary of progress made each day.

B. A photocopy may be made of the same "Daily Report," containing the information above, that is used by the General Superintendent. The General Superintendent may obscure confidential portions of his "Daily Report" if desired. Reports are due the following day.

C. The Superintendent shall provide the Clerk of Works a written “Weekly (look ahead) Outline Schedule” of work activities planned at the beginning of each week, for that week. The “Weekly Outline Schedule” may be a simple listing of each trade’s activities delineating areas where work is to be scheduled. Note any significant milestones.

1.17 CERTIFICATE OF SUBSTANTIAL COMPLETION

A. The Architect shall issue a Certificate of Substantial Completion for the work when and if all of the following conditions have been met:

1. The work is sufficiently complete to allow the Owner beneficial use of the premises. The work remaining to be done is not a danger to the proposed occupants and is of a minor nature.

2. The work is sufficiently complete that the Architect may make affidavits to the Building Official as required by Controlled Construction provisions of the Building Code.

3. The mechanical and electrical systems are fully operational. Required inspections and tests have been successfully completed, and the Owner has been provided instructions regarding operation and maintenance of mechanical and electrical systems in the building.

4. The Contractor has made notifications required to pay cost of final billing for utilities and termination of property insurance.

5. The Owner has made notifications required to assume the future cost of utilities, and provide property insurance.

6. The Building Official has issued a Certificate of Occupancy without restrictions or conditions relating to the contractor's work.

1.18 CITY OF WORCESTER ORDINANCES, LICENSES, PERMITS, AND FEES

A. All Contractors shall comply with City Ordinances which may affect the work of this contract and which have not been previously covered in the Contract Documents. Requirements and fees listed are those in effect as of this writing and each Contractor shall be responsible for verifying the requirements and fee cost as currently in effect and throughout the duration of this project. This includes, but is not limited to, the following:

Worcester Police Department:

Police Details
Hourly rate for one-half day or full day.
Permits for Sunday and Holiday work
Fee Required.

Department of Public Works, Permits Division

Street Opening Permit Bond
$ 5,000.00
Barricade Placement by DPW
1st $85 per day
Each additional $ 40 per day
Drainlayers License
New $ 200.00
Annual Renewal $ 100.00
Drain Permit
$ 180.00
Main Inspection
$ 2.90 per Foot
Assessment
To be Determined
Plan Review
$ 100.00
Street Obstruction
$ 150.00 each
Street Obstruction (Blanket Permit)
$ 1,000.00 per year
Street Opening
Pavement older than 5 years $ 156.00
Pavement 5 years old or less $ 300.00
Driveway Opening
Permit $ 156.00
Wastewater Discharge
Permit $ 250.00
Inspection $ 400.00
Sewer use $ 6.29/CCF
Water meter, etc. Contact Water Department at 508-799-1492.

Traffic and Parking. Contact Department at 508-799-1468.

Worcester Fire Department

NFPA 241
Fire and Smoke Alarm
Automatic Sprinkler and Standpipes
Contact Worcester Fire Department at 508-799-1826.

Department of Inspectional Services

Building Permit
Based on total contract price
$11/$1,000 up to first million dollars.
$8.00 per each $1,000.00 over $1,000,000.
Orders of Building Official under Chapter 1, 780 CMR.
Ticket violation under Chapter 33, 780 CMR.

Trash Control
Ticket for Violations

Environmental Control
Air, Water, Noise Pollution - Ticket for Violations
Conservation Commission Enforcement Officer

1.17 UTILITY COMPANY BACKCHARGES

A. Not applicable.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 010450 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawing 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 cutting and patching work not specified elsewhere.

B. Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

1. Requirements of this Section apply to all Sections of the Specifications, including mechanical and electrical installations.

C. Any finished new work required to be cut out due to lack of coordination and scheduling, will be repaired by the trade causing cutting and patching to be done. This work will be done at no additional cost to the Owner.

1.3 SUBMITTALS

A. Cutting and Patching Proposal: Where approval of procedures for cutting and patching is required before proceeding, submit a proposal describing procedures seven (7) days in advance of the time cutting and patching will be performed and request approval to proceed. Include the following information, as applicable, in the proposal:

1. Describe the extent of cutting and patching required. Show how it will be performed and indicate why it cannot be avoided.
2. Describe anticipated results in terms of changes to existing construction; include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.
3. List products to be used and firms or entities that will perform Work.
4. Indicate dates when cutting and patching will be performed.
5. List utilities that will be disturbed or affected, including those that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.
6. Where cutting and patching involves adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with the original structure.
7. Approval by the Architect to proceed with cutting and patching does not waive the Architect's right to later require complete removal and replacement of unsatisfactory work.

1.4 QUALITY ASSURANCE

A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their load-carrying capacity or load-deflection ratio.

1. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements:

a. Foundation construction.
b. Bearing walls.
c. Structural concrete.
d. Lintels.
e. Structural decking.
f. Miscellaneous structural metals.
g. Piping, ductwork, and equipment.

B. Operational and Safety Limitations: Do not cut and patch operating elements or safety related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.

1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:

a. Primary operational systems and equipment.
b. Air or smoke barriers.
c. Water, moisture, or vapor barriers.
d. Membranes and flashing.
e. Control systems.
f. Communication systems.

C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities, or result in visual evidence of cutting and patching. Remove and replace Work cut and patched in a visually unsatisfactory manner.

1. If possible, retain the original installer or fabricator to cut and patch the following categories of exposed Work, or if it is not possible to engage the original installer or fabricator, engage another recognized experienced and specialized firm:

a. Acoustical ceilings.
b. Carpeting.
c. Vinyl flooring.

1.5 WARRANTY

A. Existing Warranties: Replace, patch, and repair material and surfaces cut or damaged by methods and with material in such a manner so as not to void any existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Use materials that are identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 - EXECUTION

3.1 INSPECTION

A. Before cutting existing surfaces, examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.

1. Before proceeding, meet at the site with parties involved in cutting and patching. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

B. All cutting and patching by all trades shall be done under direction and coordination of the General Contractor. Accurately lay out all conduit runs, piping, recessed items, etc.

C. Inspect existing conditions of project, including elements subject to damage or to movement, during cutting and patching.

D. After uncovering work, inspect conditions affecting installation of products, or performance of work.

E. Report unsatisfactory or questionable conditions to the Architect in writing; do not proceed with work until Architect has provided further instructions.

F. No holes or slots shall be drilled through any structural member. Inspect holes after finishes have been removed to assure that substrate is not structural. No holes to be blindly drilled through walls, ceilings, etc.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.

C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Take all precautions necessary to avoid cutting existing pipe, conduit or ductwork serving the building.

E. Provide adequate temporary support as necessary to assure structural value or integrity of affected portion of work.

F. Provide devices and methods to protect other portions of project from damage.

G. Provide protection from elements for that portion of the project, which may be exposed by cutting and patching work.

3.3 PERFORMANCE

A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.

1. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.

B. Cutting: Cut existing construction using methods least likely to damage elements to be retained or adjoining construction.

1. In general, where cutting is required, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
3. Cut through concrete and masonry using a cutting machine, such as a carborundum saw or diamond core drill.
4. Comply with requirements of applicable Sections of Division 2 where cutting and patching requires excavating and backfilling.

C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.

1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

D. Execute cutting and demolition by methods, which will prevent damage to other work, and will provide proper surfaces to receive installation of repairs.

E. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances and finishes.

F. Restore work, which has been cut or removed to match the original adjacent surfaces exactly in color, material and texture. Include repainting of new work. Install new products to provide completed work in accordance with requirements of Contract Documents.

G. Fit work airtight to pipes, sleeves, ducts, conduit and other penetrations through surfaces. All penetrations through separation walls shall be sealed with fire stopping sealant. All penetrations through foundations and exterior walls shall be sealed watertight and shall include proper flashings, drip loops, weatherproof covers, etc. as necessary.

H. Dust and debris from cutting shall be cleaned up immediately after.

3.4 HOLES

A. The General Contractor and subcontractors shall drill all their own holes if sleeves were missed, improperly placed, or not large enough. Holes made by the General Contractor and subcontractors shall be accurate and neat and not just punched out. No long slots shall be made where piping or conduit may be placed in individual holes. No cutting or patching shall be done which, in the opinion of the Architect, will endanger or impair construction or finish.

B. No cores shall be drilled in concrete walls or slabs in excess of six (6) inches without prior approval from the Structural Engineer. The Structural Engineer must approve any cutting of structural steel.

C. Holes cut in fire-resistive walls and floors shall be neatly made and consistent with listing for firestopping assembly to be used.

3.5 CLEANING

A. Thoroughly and completely clean areas and spaces where cutting and patching is performed or used as access. Remove paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finish is applied. Restore damaged pipe covering to its original conditions.

END OF SECTION 010450

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SECTION 012000 - PROJECT MEETINGS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for project meetings, including, but not limited to, the following:

1. Pre-Construction Conference.
2. Pre-Installation Conference.
3. Bi-Weekly Progress Meetings.
4. Coordination Meetings.
5. Project Closeout Conference.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 1 Section 012900 “Applications for Payment” for procedures on submitting requisitions.
2. Division 1 Section 013100 “Project Coordination” for procedures for coordinating project meetings with other construction activities.
3. Division 1 Section 013300 “Submittal Procedures” for submitting the Contractor's Construction Schedule.
4. Division 1 Section 017700 “Project Closeout” for procedures and issues surrounding Project Completion.

1.3 PRE-CONSTRUCTION CONFERENCE

A. Schedule a pre-construction conference before starting construction, immediately after execution of the Agreement. Conference is to be held at the Project Site, or other agreed upon location, at a time convenient to both the Owner and Architect. Conduct the meeting to review responsibilities and personnel assignments. Submit agenda to Architect and Owner three (3) days prior to meeting date.

B. Attendees: Authorized representatives of the Owner, Architect, and their consultants; the Contractor and its superintendent; major subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.

C. Agenda: Discuss items of significance that could affect progress, including the following:

1. Introduction of All Project Members.
2. Distribution of Contract Documents.
3. Procedures Outlined for Contract Compliance Issues.
4. Tentative Construction Schedule; Making Notes of Critical Dates.
5. Critical Work Sequencing.
6. Pre-Installation Conferences.
7. Work Hours.
8. Use of the Premises.
9. Deliveries.
10. Security Procedures.
11. Parking and Site Access Issues.
12. Office, Work, and Storage Areas.
13. Housekeeping & Cleaning of Construction Areas.
14. Safety Procedures.
15. First Aid.
16. Procedures for Creating Monthly Cash Flow/Schedule.
17. Procedures for processing Draft Application for Payment Periodic Submittals Certification Statement.
18. Procedures for processing Applications for Payment.
19. Procedures for RFI's, SI's, RFP's, COP's, CCD's, CO's, etc…
20. Procedures for Keeping Logs on RFI's, SI's, RFP's, COP's, CCD's, CO's, etc…
21. Project Coordination Procedures & Drawings.
22. Project Meetings & Meeting Minutes.
23. Unit Prices.
24. Procedures for Submittals.
25. Quality Control, Inspections, and Testing.
26. Temporary Facilities.
27. Preparation of Project Closeout Documents.

D. The Contractor shall record and promptly distribute minutes of this meeting to all project members (in attendance or not), including the Architect and Owner, and as additionally directed by the Architect.

1. Meeting Minutes shall be in a standard type-written format to remain consistent for every project meeting and include, but not limited to, the following items:

   a. Detailed notes from all discussions of project business items in chronological order.
   b. Updated Project Contractor, Subcontractor, Vendor List.
   c. Updated Construction Schedule.

1.4 PRE-INSTALLATION CONFERENCES

A. Conduct a pre-installation conference at the Project Site before each construction activity that requires coordination with other construction.

B. Attendees: The Installer and representatives of manufacturers and fabricators involved in or affected by the installation, and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise the Architect of scheduled meeting dates.

1. Review the progress of other construction activities and preparations for the particular activity under consideration at each pre-installation conference, including requirements for the following:

    a. Contract Documents.
    b. Options.
    c. Related Change Orders.
    d. Purchases.
    e. Deliveries.
    f. Shop Drawings, Product Data, and quality-control samples.
    g. Review of mockups or finish samples.
    h. Possible conflicts.
    i. Compatibility problems.
    j. Time schedules.
    k. Weather limitations.
    l. Manufacturer's recommendations.
    m. Warranty requirements.
    n. Compatibility of materials.
    o. Acceptability of substrates.
    p. Temporary facilities.
    q. Existing Occupancies.
    r. Space and access limitations.
    s. Governing regulations.
    t. Safety.
    u. Inspecting and testing requirements.
    v. Required performance results.
    w. Recording requirements.
    x. Protection.

2. The Contractor shall record significant discussions and agreements and disagreements of each conference, and the approved schedule. The Contractor shall promptly distribute the record of the meeting to everyone concerned, including the Owner and the Architect.
3. Do not proceed with the installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of Work and reconvene the conference at the earliest feasible date.

1.5 PROGRESS MEETINGS

A. Conduct progress meetings at the Project Site weekly. Notify the Owner and the Architect of scheduled meeting dates. Coordinate dates of meetings with preparation of the payment request. General Contractor to record minutes of all meetings.

B. Attendees: In addition to representatives of the Owner and the Architect, each subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.

C. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the status of the Project.

1. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to insure that current and subsequent activities will be completed within the Contract Time.

2. Review the present and future needs of each entity present, including the following:

   a. Interface Requirements.
   b. Time & Project Progress.
   c. Work Hours.
   d. Updated Weekly Look-Ahead Schedule.
   e. Critical Work Sequencing.
   f. Off-Site Fabrication Problems.
   g. Updated Pre-Installation Conference Schedule.
   h. Deliveries.
   i. Use of the Premises.
   j. Security Procedures.
   k. Parking Issues & Snow Removal.
   l. Office, Work, and Storage Areas.
   m. Housekeeping & Cleaning of Construction Areas.
   n. Safety Procedures.
   o. First Aid.
   p. Draft Application for Payment Periodic Submittals Certification Statement (At Appropriately Timed Meeting Each Month).
   q. Updated Submittal, RFI, SI, RFP, COP, CCD, and CO Logs.
   r. New Submittals, RFI’s, SI’s, RFP’s, COP’s, CCD’s, CO’s, etc…
   s. Any Project Coordination Issues or Drawings.
   t. Quality Control, Inspections, and Testing.
   u. Temporary Facilities.
   v. Preparation of Project Closeout Documents.

3. The Contractor shall record and promptly distribute minutes of this meeting to all project members (in attendance or not), including the Architect and Owner, and as additionally directed by the Architect.

   a. Meeting Minutes shall be in a standard type-written format to remain consistent for every project meeting and include, but not limited to, the following items:

      (i) Detailed notes from all discussions of project business items in chronological order.
      (ii) Updated Project Contractor, Subcontractor, Vendor List.
      (iii) Updated Construction Schedule.

(iv) Updated Weekly Look-Ahead Schedule.
(v) Updated Submittal, RFI, SI, RFP, COP, CCD, and CO Logs.

1.6 COORDINATION MEETINGS

A. Conduct coordination meetings with all trades convenient for all parties involved. In addition conduct coordination meetings when requested by the Architect or Clerk of Works.

1.7 TIME OF PROGRESS AND COORDINATION MEETINGS

A. Conduct both meetings weekly on a day agreeable to all parties, at a designated location at the site, or other agreed upon location.

1.8 PROJECT CLOSEOUT CONFERENCE

A. The Project Close-Out Conference shall be conducted at a time convenient for all parties involved prior to Substantial Completion. Refer to Section 01700 – Project Closeout for additional information for requirements.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

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SECTION 012500- SUBSTITUTION PROCEEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for handling requests for substitutions made after award of the Contract.

B. References Standards and Definitions: Refer to Section 014200 "Reference" for applicability of industry standards to products specified.

1. Requirements for submitting the Contractor's Construction Schedule and the Submittal Schedule are included under Section 013300 “Submittal Procedures”.
2. Procedural requirements governing the Contractor's selection of products and product options are included under Section 016000 “Product Requirements”.

1.3 DEFINITIONS

A. Definitions used in this Article do not change or modify the meaning of other terms used in the Contract Documents.

B. Substitutions: Changes in products, materials, equipment, and methods of construction required by the Contract Documents proposed by the Contractor after award of the Contract are considered to be requests for substitutions. The following are not considered to be requests for substitutions:

1. Specified options of products and construction methods included in the 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 two (2) days after commencement of the Work. Requests received more than two (2) 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 according to procedures required for Change-Order Proposals.
2. Identify the product or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers.

3. 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 and fabrication and installation procedures.
   b. Samples, where applicable or requested.
   c. 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.
   d. Cost information, including a proposal of the net change, if any in the Contract Sum.
   e. The Contractor's certification that the proposed substitution conforms to requirements in the Contract Documents in every respect and is appropriate for the applications indicated.

4. Architect's Action: Within five (5) days of receipt of a request for substitution the Architect will request additional information or documentation for evaluation necessary for the evaluation of the request. Within five (5) days of receipt of the request, or of receipt of additional information or documentation, whichever is later, the Architect will notify the Contractor of acceptance or rejection of the 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 the Contract Sum or Contract Time is required; or in the form of the Architect’s Supplementary Instructions when no change to the Contract Sum or Time is required.

1.5 WORK CONDITIONS / SEQUENCE

A. If sub-contractors find that conditions are not appropriate for them to begin the work of their trade or if they are directed to perform their work out of sequence by the General Contractor or if the General Contractor directs sub-contractors to start and continue regardless of job conditions, the sub-contractor shall so notify the Architect in writing by certified mail immediately.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. The Contractor's submittal and the Architect's acceptance of Shop Drawings, Product Data, or Samples that relate to construction activities not complying with the Contract Documents <u>do not constitute an acceptable or valid request for substitution, nor do they constitute approval</u>.

B. Conditions: The Architect will receive and consider the Contractor's request for substitution when one or more of the following conditions are satisfied, as determined by the Architect. If the following conditions are not satisfied, the Architect will return the requests without action except to record non-compliance with these requirements.

1. Extensive revisions to the Contract Documents are not required.
2. Proposed changes are in keeping with the general intent of the 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 provides the required warranty.

PART 3 - EXECUTION (Not Used)

END OF SECTION

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SECTION 012600 – CONTRACT 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 012900 “Payment Procedures” for administrative procedures governing applications for payment.
2. Division 1 Section 013300 “Submittal Procedures” for requirements for the Contractor’s Construction Schedule.
3. Division 1 Section 012500 "Substitution Procedures" 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 on the City's Form of Supplemental Instructions.

1.4 REQUEST FOR PROPOSAL

A. Owner initiated Request for Proposal: 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.

1.5 PROPOSED CHANGE ORDER

A. Proposed Change Order: Using the form at the end of this section submit your proposal for the adjustment to the Contract Sum or Contract Time in response to a Request for Proposal or for Contractor initiated request for a change with Proposed Change Order.

1. Unless otherwise indicated in the Request For Proposal, 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 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 request for change with Proposed Change Order: 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 Contract Time.
    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 delivery charges, equipment rental, and amounts of trade discounts.
    c. Comply with requirements in Section 01631 "Product Substitutions" if the proposed change in the Work requires the substitution of one product or system for a product or system specified.

1.6 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-in-place by independent quantity survey, measure, or count.

B. Submit claims for increased costs because of a change in scope 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 or Construction Change Directive 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 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.

1.7 CONSTRUCTION CHANGE DIRECTIVE

A. A Construction Change Directive shall be issued for all work involving a change in contract cost or time. The Construction Change Directive instructs the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. The Construction Change Directive will contain a complete description of the change in the Work and designate the method to be followed to determine change in the Contract Sum or Contract Time, or is for a lump sum amount approved by the Architect.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive, if so directed by the Architect.

1. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.8 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.

1.9 OVERHEAD AND PROFIT

A. Overhead and Profit will be as noted elsewhere in these specifications.

1. Labor rates shall not exceed those shown in the contract specifications as set forth by the Department of Labor and Industries.

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.

PART 2 - PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 012900 – PAYMENT 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 part of this Section.

B. Related Sections: Sections which contain requirements that relate to this Section include, but are not limited to the following:

1. Section 013300 – Submittal Procedures

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements governing the Progress Schedule, Schedule of Values, and 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 013300 "Submittals".

1.3 PROGRESS SCHEDULE

A. Prepare the Progress Schedule in accordance with Article 8, Paragraphs 8.2.3 and 8.2.4 of the General Conditions for approval by the Architect.

1. The Progress Schedule shall conform to the requirements in Section 013300, paragraph 1.4, Contractor’s Progress Schedule and the sample bound in the aforementioned paragraph.

1.4 SCHEDULE OF VALUES

A. Coordinate preparation of the Schedule of Values with preparation of the Progress Schedule.

1. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:

a. Contractor's Progress Schedule.
b. Application for Payment forms.
c. List of products.
d. Schedule of allowances, if any.
e. Schedule of alternates, if any.
f. Schedule of unit prices, if any.

g. List of products.
h. List of principal suppliers and fabricators.
i. Schedule of submittals.

2. Submit the Schedule of Values to the Architect at the earliest possible date, but no later than seven (7) days before the date scheduled for submittal of the initial Application for Payment.

B. Format and Content: Use the Project Manual Table of Contents as a guide to establish the format for the Schedule of Values. Provide at least one (1) line item for each Specification Section. Coordinate with the Architect for exact breakdown of major categories of work including, but not limited to major equipment and project closeout submittals.

1. Include the following Project identification on the Schedule of Values:

a. Project name and location.
b. Name of the Architect.
c. Project 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. Description of Work.
d. Name of subcontractor.
e. Name of manufacturer or fabricator.
f. Name of supplier.
g. Change Orders (numbers) that have affected value.
h. Dollar value to nearest dollar.
i. 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. Breakdown shall be done by sequence. Coordinate with the Project Manual Table of Contents. Break principal subcontract amounts down into several line items, including but not limited to major equipment and project closeout submittals.

4. Do not round amounts off to the nearest whole dollar; carry all amounts out to the two (2) decimal places and the totals 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 for each item.

   a. Temporary facilities, project closeout submittals, and other major cost items that are not direct cost of actual work-in-place shall be shown as separate line items in the Schedule of Values or distributed as general overhead expense, at the Contractor's option.

7. Schedule Updating: Update and resubmit the Schedule of Values prior to the next Application for Payment when Change Orders or Construction Change Directives result in a change to the Contract Sum.

1.5 APPLICATIONS FOR PAYMENT

A. Draft Application Preparation: Submit three (3) **draft** copies of the (current) Application for Payment at the weekly project meeting for Architect's review seven (7) days in advance of the "Payment Application Time" as indicated in the Agreement.

   1. Draft Application for Payment transmittal shall include the a fully executed Draft Cover Sheet or **Periodic Submittal Certification Statement** on Contractor letterhead (bound at the end of this section hereafter) certifying that the following Periodic Submittals are current for the appropriate period:

      a. Originals of All Waivers of Mechanics Lien & Corresponding Logs Covering Status of All Waivers
      b. Certified payrolls
      c. Contract Compliance Submittals
      d. Insurance and transfer title certificates for any material stored off site
      e. Updated as-built drawings of record reflecting Work for the current Application period

B. 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.

C. Payment Application Times: Each progress payment date is as indicated in the Agreement. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.

D. Payment Application Cover Sheet Form: Complete the enclosed **Application and Certification for Payment Cover Sheet** on Contractor letterhead (bound at the end of this Section hereafter) and transmit with each Payment Application Form submittal.

E. 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.**

F. Application Preparation: Complete every entry on the form, including notarization and execution by a person authorized to sign legal documents on behalf of the Contractor. The Architect will return incomplete applications 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 only amounts of approved and fully executed Change Orders. Obtain approval from the Architect prior to inclusion into the Application.
3. Each Application for Payment **must** be accompanied by an updated Progress Schedule. The format to which is subject to the Architect’s approval.

G. Payment for materials and/or equipment stored off site shall be considered upon the Owner’s approved submission by the Contractor bill(s) of sale or such other documentation or procedures satisfactory to the Owner to establish the Owner’s clear and legal title to such materials and/or equipment or otherwise provided to protect the Owner’s interest. This shall include applicable insurance and transportation to the project site for those materials and/or equipment suitably stored off site under consideration for payment.

1. Any Contractor making an application for payment pursuant to Section 00200 – General Conditions, paragraph 9.3.2, shall provide the following written documentation to the Architect through the General Contractor as delineated below and as otherwise maybe reasonably requested by the Owner:

   a. Bill of Material, Purchase Order or Invoice Number.
   b. Product Description Listing.
   c. Serial Numbers (If Applicable)
   d. Materials and/or Equipment (wares) shall be segregated from all other stock or equipment and clearly labeled and/or marked as City of Worcester Property.
   e. Wares shall be available for inspection at all times and in any event within twenty-four (24) hours after receiving prior notice from the Owner/Architect.
   f. Provide written directions from the project site to the location of the stored wares.
   g. Name of contact person at the storage site and applicable telephone numbers.
   h. Method and mode of transportation from off site storage location to the job site.

H. Retainage: In accordance with the Supplemental General Conditions, the Awarding Authority (Owner) shall deduct a retainage not exceeding five (5) percent of the approved amount of the periodic payment. The aforesaid five (5) percent retainage

deduction by the Owner is the only retainage authorized hereunder. The contractor shall not deduct any amounts from payments received on behalf of subcontractors, except those deductions specifically authorized by M.G.L. Chapter 30, Section 39(1)(a).

1. Upon the initial and any subsequent Application for Payment; requesting or reflecting a “Release of Retainage” provide a Summary cover sheet indicating the derivation arithmetically, by each line item, of the total released to date and the of the current total retainage sum.

I. Transmittal: Upon receipt of the required periodic submittals enumerated above and upon approval of the "Draft Application", submit six (6) fully executed and notarized original copies with Cover Sheet of the current Application for Payment to the Architect by means ensuring receipt within twenty-four (24) hours. One (1) copy shall be complete, including waivers of lien and similar attachments.

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.

J. Waivers of Mechanics Lien: With each Application for Payment, submit waivers of mechanics lien from every entity who may lawfully be entitled to file a mechanics lien arising out of the Contract, and related to the Work covered by the payment.

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.
3. The Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Waiver Delays: Submit each Application for Payment with the Contractor's waiver of mechanics lien for the period of construction covered by the previously paid application.

    a. Submit final Application for Payment with, or preceded by, final waivers from every entity involved with performance of Work covered by the application that could lawfully be entitled to a lien.

5. Waiver Forms: Submit waivers of lien on forms, and executed in a manner, acceptable to Owner.

K. 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; at all tiers.
2. List of principal suppliers and fabricators.

3. Approved Schedule of Values.
4. Approved Contractor's Progress Schedule see Section 01300, Paragraph 1.4.
5. Contractor's Construction Schedule (preliminary if not final).
6. Schedule of principal products.
7. Submittal Schedule (preliminary, if not final).
8. List of Contractor's staff assignments.
9. List of Contractor's principal consultants.
10. Copies of building permits.
11. Copies of authorizations, permits and licenses from governing authorities for performance of the Work.
12. Initial progress report.
13. Report of pre-construction meeting.
14. Schedule of Pre-installation meetings.
15. Certificates of insurance and insurance policies.
16. Performance and payment bonds.
17. Data needed to acquire Owner's insurance.
18. Initial settlement survey and damage report, if required.
19. List of Contractor's personnel names and titles assigned on the project and emergency telephone numbers.

L. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment.

1. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
2. Administrative actions and Submittals that shall precede or coincide with this application include:

    a. Occupancy permits and similar approvals.
    b. Warranties (guarantees) and maintenance agreements.
    c. Test/adjust/balance records.
    d. Maintenance instructions.
    e. Meter readings.
    f. Start-up performance reports.
    g. Changeover information related to Owner's occupancy, use, operation and maintenance.
    h. Final cleaning.
    i. Application for reduction of retainage, and consent of surety
    j. Advice on shifting insurance coverage.
    k. Final progress photographs.
    l. List of incomplete work, recognized as exceptions to Architect's Certificate of Substantial Completion.

M. 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 incomplete Work and Work not accepted will be completed without undue delay.
5. Transmittal of required Project construction records to the 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.
11. Order of Conditions Certificate of Compliance, if applicable.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

CONTRACTOR LETTER HEAD

APPLICATION AND CERTIFICATION FOR PAYMENT COVER SHEET

PROJECT:_____ APPLICATION NO: _____

For
Period
Ending: _____ AMOUNT CERTIFIED: $_____

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief, the Work covered by this Application for Payment has been completed in accordance with the Contract Documents; and the current Payment shown herein is now due.

The Contractor further certifies that the entire amount of all previous Payments received for labor performed and materials furnished have been promptly paid to all Subcontractors whose work was certified for payment on previous applications, less, where applicable, only an amount specified in any court proceeding barring such payment and/or an amount claimed due from the Subcontractor by the Contractor as expressly authorized by M.G. L. Chapter 30, Section 39F (1) (a). No other amounts have been deducted or retained from such payments by the contractor.

Contractor: _____ **STATE OF:** _____

Signed by: _____ **COUNTY OF:** _____

Date: _____ Subscribed and sworn to before me on this _____ Day of _____ 20__.

Notary public:
_____
My Commission Expires:
_____

APPROVED FOR PAYMENT:

Signed:_____
By: James Bedard, Facilities Director

Signed:_____
By: Robert Sherman., Architect

Date:_____

Date:_____

Signed:_____
By:

Signed:_____
By:

Date:_____ Date:_____

CONTRACTOR LETTER HEAD

DRAFT APPLICATION FOR PAYMENT
PERIODIC SUBMITTAL CERTIFICATION STATEMENT

Project Name: Draft Application Date: _____

Draft Application No._____ (Requisition No.)

For Period:
Starting _____
Through Period
Ending _____

_____(Name of Contractor)
, certifies that the "Draft Application for Payment" as herein submitted with all of the following Periodic Submittals fully and completely executed and current for the appropriate time period(s) as required.
FURNISH THE FOLLOWING PERIODIC SUBMITTALS AND PROVIDE ALL REQUIRED INFORMATION FOR THE APPROPRIATE TIME PERIOD(S) AS REQUESTED. PLEASE SUBMIT ON **SEPARATE** SHEETS:

I. **Original Waivers of Mechanic Lien:** List every entity who may be lawfully entitled to file a lien resulting out of this Contract, including but not limited to; contractors/subcontractors, at all tiers, vendors, and suppliers. Submit current originals of all Waivers covering all WORK completed through the period ending thirty (30) days prior to this periods "Application" date and as further required in I above.

II. **Certified Payrolls:** All payroll reports have been submitted as required by the Contract Compliance Office.

III. **Contract Compliance Reports:** All contract compliance reports have been submitted as required by the Contract Compliance Office.

IV. **Insurance & Title Transfer Certificates** for material stored off site, if applicable.

V. **Updated As-Built Drawings:** Record drawings have been submitted reflecting the work completed up to the time of Application.

This Draft Application for Payment Certification Statement and corresponding Periodic Submittals (attached) shall be reviewed by the Awarding Authority for completeness. Any deficiency, discrepancies or missing items shall cause this Draft Application for Payment to be returned to the Contractor with no action taken.
I, _____ hereby certify, that the Periodic
(Name of contractor)

Submittals indicated herein have been reviewed by the undersigned and are complete and current as required under provisions of this Contract.

_____
_____
(Name of Authorized Person) (Date)

_____
(Title)

END OF SECTION

SECTION 013100 – PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies administrative and supervisory requirements necessary for project coordination including, but not limited to the following:

1. Coordination and cutting, drilling and patching.
2. General installation provisions.
3. Administrative and supervisory personnel.
4. Cleaning and protection.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Project meetings, coordination meetings, and pre-installation conferences are included in Section “Project Meetings.”
2. Requirements for preparing and submitting the Contractor's Construction Schedule are included in Section “Submittals.”

1.3 COORDINATION

A. Coordinate construction operations included in various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections of the specifications that depend on each other for proper installation, connection, and operation.

1. Where installation of one part of the Work depends on installation of other components, either before or after its own installation, schedule construction operations in the sequence required to obtain the best results.
2. Where availability of space is limited coordinate installation of different components to assure maximum accessibility for required maintenance, service, and repair.
3. Make provisions to accommodate items scheduled for later installation.
4. The General Contractor shall as part of his work provide for all cutting, patching and drilling, not specified to be the work of others.

B. Where necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.

1. Prepare similar memoranda for the Owner and separate contractors where coordination of their work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and assure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of schedules.
2. Installation and removal of temporary facilities.
3. Delivery and processing of submittals.
4. Progress meetings.
5. Project closeout activities.

D. Conservation: Coordinate construction operations to assure that operations are carried out with consideration given to conservation of energy, water, and materials.

1.4 SUBMITTALS

A. Coordination Drawings: Prepare coordination Drawings where careful coordination is needed for installation of products and materials fabricated by separate entities. Prepare coordination drawings where limited space availability necessitates maximum utilization of space for efficient installation of different components.

1. Show the relationship of components shown on separate Shop Drawings.
2. Indicate required installation sequences.
3. Comply with requirements contained in Section 01300 – Submittals.
4. Format to be as directed by the Architect.

B. Staff Names: Within fifteen (15) days of commencement of construction operations, submit a list of the Contractor's principal staff assignments, including the superintendent and other personnel in attendance at the Project Site. Identify individuals and their duties and responsibilities. List their addresses and telephone numbers. Provide twenty-four (24) hour Emergency telephone numbers listed separately.

1. Post copies of the list in the Project meeting room, the temporary field office, and each temporary telephone.
2. The Contractor shall provide a copy of the list, and updates as its changes, to the Worcester Police Department and other City Departments as directed by the Architect.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION PROVISIONS

A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

B. Manufacturer's Instructions: Comply with manufacturer's written instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent the requirements contained in Contract Documents.

C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.

D. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.

E. Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Architect for final decision.

F. Re-check measurements and dimensions, before starting each installation.

G. Install each component during weather conditions that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.

H. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.

I. Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decision to the Architect for final decision.

3.2 CLEANING AND PROTECTION

A. During handling and installation clean and protect construction in progress and adjoining materials in place. Apply protective covering where required and as necessary to assure protection from damage or deterioration.

B. Clean and maintain all completed construction as frequently as necessary through the remainder of the construction period.

C. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in-progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:

1. Excessive vibration.
2. Excessive static or dynamic loading.
3. Excessive internal or external pressures.
4. Excessively high or low temperatures.
5. Thermal shock.
6. Excessively high or low humidity.
7. Air contamination or pollution.
8. Air borne debris/dust or construction particulates.
9. Water or ice.
10. Solvents.
11. Chemicals.
12. Light.
13. Puncture.
14. Abrasion.
15. Heavy traffic.
16. Soiling, staining, and corrosion.
17. Bacteria.
18. Rodent and insect infestation.
19. Combustion.
20. Electrical current.
21. High-speed operation.
22. Improper lubrication.
23. Unusual wear or other misuse.
24. Contact between incompatible materials.
25. Destructive testing.
26. Misalignment.
27. Excessive weathering.
28. Unprotected storage.
29. Improper shipping or handling.
30. Theft.
31. Vandalism.

END OF SECTION 013100

SECTION 013300 – SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1. The submittals enumerated below shall require review and/or approval by the Architect.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for submittals required for performance of the Work, including:

1. Contractor's Progress Schedule.
2. Major delivery schedule.
3. Existing utility tie-in’s schedule.
4. Submittal schedule.
5. Pre-Installation Conference Schedule (By Specification Section).
6. Daily construction reports.
7. Shop drawings.
8. Product data.
9. Samples.
10. Coordination Drawings.
11. Quality assurance submittals.
12. Submittal of three (3) sets of plans and specifications, complete with all addendums posted, to the City of Worcester Building Department to obtain building permit.

B. Administrative Submittals: Refer to other Division 1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to, the following:

1. Product Substitution.
2. Periodic Submittals.
3. Permits.
4. Applications for Payment.
5. Performance and payment bonds.
6. Insurance Certificates.
7. List of Project Contractors, Subcontractors, Vendors, etc.
8. List of Personnel and Emergency Telephone Numbers.
9. City Ordinance Program Forms.

C. The Schedule of Values submittal is included in Section 01027 "Applications for Payment".

D. "Project Closeout", Section 01700, specifies requirements for submittal of Project Record Documents and warranties at project closeout.

1.3 SUBMITTAL PROCEDURES/SHOP DRAWINGS

A. Submittal procedures shall be electronic for all submittals for approval and distribution unless otherwise noted. Provide to the owner one copy of all approved submittals in an organized manner with a submittal log. All color samples must be distributed as hard copies, and also electronically filed in order to track. Electronic files shall be clean, clear and readable. Plan files to be PDF and/or AutoCAD and be to scale as appropriate. Contractor to transmit and update each submittal and process electronically, maintain a log that is distributed and updated weekly. All e-mails to clearly identify the submittal number and shall include the log, Or the contactor to maintain a web-based system used for submittals, and the construction process.

B. Distribution: Distribution of submittals shall be distributed as follows unless otherwise noted:

1. Architect.
2. Clerk of Works.
3. Owner – electronic and paper copy.
4. A minimum of Three (3) copies for the Contractor as necessary for distribution to subcontractors, suppliers, installers, manufacturers, fabricators, and any other applicable parties.

C. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

D. Processing: All Contractors are directed to the timeliness and critical importance of expediting the submittal process. Any lead times, which may impact sequencing, should be prioritized to meet the project schedule. Architect must be notified if any delays arise that will impact lead times.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that requires sequential activity.
2. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.
3. To avoid the need to delay installation as a result of the time required to process submittals and to allow sufficient time for submittal review, all contractors' submittals shall be submitted for processing and have received final Architect's approval within 45 days from the date of Contract.

   a. Allow ample time for initial review to achieve efficient construction sequencing. Allow additional time if the Architect must delay processing to permit coordination with subsequent submittals.
   b. If an intermediate submittal is necessary, process the same as the initial submittal.
   c. Allow ample time for reprocessing each submittal to achieve efficient construction sequencing.

d. No extension of Contract Time will be authorized because of the contractor's failure to transmit submittals to the Architect for processing sufficiently in advance of the scheduled Work.

E. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.

1. Provide a space approximately 4 by 5 inches on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
2. Include the following information on the label for processing and recording action taken.

a. Project name.
b. Date.
c. Name and address of the Architect.
d. Name and address of the Contractor.
e. Name and address of the subcontractor.
f. Name and address of the supplier.
g. Name of the manufacturer.
h. Number and title of appropriate Specification Section.
i. Drawing number and detail references, as appropriate.

F. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from the Contractor to the Architect using a transmittal form. The Architect will not accept submittals received from sources other than the Contractor.

G. On the transmittal, record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.

1.4 CONTRACTOR'S PROGRESS SCHEDULE

A. Bar (Gantt) Chart Schedule: Meeting the requirements of Section 00200 Paragraphs 4.10, 4.10.1, 8.2.3 through 8.2.9. Prepare a fully developed, horizontal bar type of chart titled: "Progress Schedule". A sample is attached at the end of this section, some requirements specified here are not shown in the sample.

B. Time, the horizontal (x) axis in this schedule shall show the start of on site work through the Date of Substantial Completion, show the time for completion of punch list items, and show the time for general warranty and completion of commissioning.

C. Provide a separate time bar for each line in the approved "Schedule of Values" with the incremental value of work in place for each month. Work Completed (in place) must be 99% of contract value to achieve Substantial Completion. Provide a continuous vertical line to identify the first working day of each month.

D. At the bottom of the progress schedule provide:
   1. a first line showing the total value of the work planned to be completed (in place) for each month,
   2. a second line showing the cumulative total value of the work planned to be completed (in place) to date,
   3. a third line showing the actual total value of the work certified as completed (in place) on the Application and Certificate for Payment for the month, and
   4. a fourth line showing the actual total cumulative value of the work certified as completed (in place) on the Application and Certificate for payment to date.
   5. Refer to Division 1 Section 01027 "Applications for Payment" for cost reporting and payment procedures.

E. Distribution: Following approval of the initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to provide actual work in place and conform to schedule.

F. Revisions: Revisions to values and or time shown in the Progress Schedule may only be made to reflect a Change Order and in accordance with Section 00200 Paragraph 8.2.7. When revisions are made, distribute to the same parties and post at the job-site. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

G. Progress Schedule Updating: Revise the schedule after each meeting, where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

Progress Schedule (as required by Article 8, Paragraphs 8.2.3 & 8.2.4 of the General Conditions)

(Project Name)	(Architect)	(Date)
(City of Worcester Dept. or Facility)	(Construction Manager)	(Revision Date)
(Project Address)	(Contractor)	(Revised Through)

(Approved by Architect)

Section Number	Section or Filed Sub-bid Section	Mar-98 1	Apr-98 2	May-98 3	Jun-98 4	Jul-98 5	Oct-98 6	Nov-98 7	Dec-98 8	Totals
01000	General Requirements	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$32,000
02000	Sitework	$10,000	$10,000						$10,000	$30,000
03000	Concrete		$4,000	$12,000			$8,000			$24,000
04000	Masonry			$8,000	$10,000	$12,000				$30,000
05000	Metals			$20,000						$20,000
05500	Metal Fabrications							$7,000		$7,000
06000	Wood & Plastics								$4,000	$4,000
07100	Waterproofing & Caulking				$3,000					$3,000
07600	Roofing & Flashing					$12,000				$12,000
08000	Doors & Windows						$4,000			$4,000
08520	Alum. Windows							$8,000		$8,000
08800	Glass & Glazing								$1,000	$1,000
09250	Gypsum Drywall						$6,000	$5,000		$11,000
09310	Ceramic Tile							$2,000		$2,000
09511	Accoustical Ceilings							$1,000	$1,000	$2,000
09650	Resilient Flooring								$3,000	$3,000
09900	Painting								$2,000	$2,000
10000	Specialties								$14,000	$14,000
14204	Hydraulic Elevators						$8,000	$8,000	$8,000	$24,000
15400	Plumbing			$1,000	$2,000			$3,000	$5,000	$11,000
15600	HVAC					$4,000	$5,000		$4,000	$13,000
16000	Electrical			$1,000	$3,000			$4,000	$4,000	$12,000
	Total Planned to be Completed This Month	$14,000	$18,000	$46,000	$22,000	$32,000	$35,000	$42,000	$60,000	
	Total planned to be Completed To Date	$14,000	$32,000	$78,000	$100,000	$132,000	$167,000	$209,000	$269,000	$269,000
	Actual Total Completed This Month	$11,000	$22,000	$38,000						
	Actual Total Completed To Date	$11,000	$33,000	$71,000	$71,000	$71,000	$71,000	$71,000	$71,000	$470,000

1.5 SUBMITTAL SCHEDULE

A. After development and acceptance of the Contractor's Progress Schedule, prepare a complete Submittal Schedule and promptly submit the schedule to the Architect.

B. Distribution: Following response to the initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with submittal dates.

C. Submittal Schedule Updating: Revise the Submittal Schedule after each meeting or activity where revisions have been recognized or made. Issue the updated project schedule concurrently with each Application for Payment.

1.6 DAILY CONSTRUCTION REPORTS

A. Prepare a daily construction report recording the following information concerning events at the site, and submit copies to the Architect and Clerk of Works at weekly intervals:

1. List of subcontractors at the site.
2. Count of personnel at the site.
3. Accidents and unusual events.
4. Meetings and significant decisions.
5. Stoppages, delays, shortages, and losses.
6. Emergency procedures.
7. Services connected, disconnected.
8. Equipment or system tests and startups.
9. General daily work tasks and progress.

1.7 SHOP DRAWINGS

A. The Contractor's submittal and the Architect's acceptance of Shop Drawings, Product Data, or Samples that relate to construction activities not complying with the Contract Documents <u>do not constitute an acceptable or valid request for substitution, nor do they constitute approval</u>.

B. Submit newly prepared information drawn accurately to scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not a Shop Drawing.

C. Shop Drawings include fabrication and installation Drawings, setting diagrams, schedules, patterns, templates and similar Drawings. Include the following information:

1. Dimensions.
2. Identification of products and materials included by sheet and detail number.
3. Compliance with specified standards.
4. Notation of coordination requirements.
5. Notation of dimensions established by field measurement.

1.8 PRODUCT DATA

A. The Contractor's submittal and the Architect's acceptance of Shop Drawings, Product Data, or Samples that relate to construction activities not complying with the Contract Documents do not constitute an acceptable or valid request for substitution, nor do they constitute approval.

B. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information, such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, and performance curves.

1. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as “Shop Drawings”.
2. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products that are not required, mark copies to indicate the applicable information. Include the following information:

a. Manufacturer's printed recommendations.
b. Compliance with trade association standards.
c. Compliance with recognized testing agency standards.
d. Application of testing agency labels and seals.
e. Notation of dimensions verified by field measurement.
f. Notation of coordination requirements.

C. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.

D. Unless non-compliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

E. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.

1. Do not proceed with installation until a copy of Product Data is in the Installer's possession.
2. Do not permit use of unmarked copies of Product Data in connection with construction.

1.9 SAMPLES

A. The Contractor's submittal and the Architect's acceptance of Shop Drawings, Product Data, or Samples that relate to construction activities not complying with the Contract Documents do not constitute an acceptable or valid request for substitution, nor do they constitute approval.

B. Mount or display samples in the manner to facilitate review of qualities indicated. Prepare samples to match the Architect's sample. Include the following:

1. Specification Section number and reference.
2. Generic description of the sample.

3. Sample source.
4. Product name or name of the manufacturer.
5. Compliance with recognized standards.
6. Availability and delivery time.

C. Submit samples for review of size, kind, color, pattern, and texture. Submit samples for a final check of these characteristics with other elements and a comparison of these characteristics between the final submittal and the actual component as delivered and installed.

D. Preliminary Submittals: Submit a full set of choices where samples are submitted for selection of color, pattern, texture, or similar characteristics from a range of standard choices.

1. Preliminary submittals will be reviewed and returned with the Architect's mark, indicating selection and other action.

E. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation, and similar characteristics, submit three (3) sets. One (1) set will be returned marked with the action taken.

1. Maintain sets of samples, as returned, at the Project Site, for quality comparisons throughout the course of construction.

F. Unless non-compliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

1. Sample sets may be used to obtain final acceptance of the construction associated with each set.

1.10 QUALITY ASSURANCE SUBMITTALS

A. Submit quality-control submittals, including design data, certifications, manufacturer's instructions, manufacturer's field reports, and other quality-control submittals as required under other Sections of the Specifications.

B. Certifications: Where other Sections of the Specifications require certification that a product, material, or installation complies with specified requirements; submit a notarized certification from the manufacturer certifying compliance with specified requirements.

1. Signature: Certification shall be signed by an officer of the manufacturer or other individual authorized to sign documents on behalf of the company.

1.11 ARCHITECT'S ACTION

A. Except for submittals of record or information, where action and return is required or requested, the Architect will review each submittal, mark to indicate action taken, and return as noted in Paragraph 1.3A.

B. Compliance with specified characteristics is the Contractor's responsibility.

C. Action Stamp: The Architect will stamp each submittal with a uniform, self-explanatory action stamp. The Architect will mark the stamp appropriately to indicate the action taken:

D. Final Unrestricted Release: When submittals are marked "Approved", the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend on that compliance.

1. Final-But-Restricted Release: When submittals are marked "Approved as Noted", that Work covered by the submittal may proceed provided it complies with markings or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
2. Returned for Resubmittal: When submittal is marked “Approved as Noted - Revise and Resubmit” or “Not Approved, Revise and Resubmit", do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal according to the markings and resubmit without delay. Repeat if necessary to obtain different action mark.

E. The Contractor shall not use, or permit to be used submittals marked “Approved as Noted - Revise and Resubmit” or "Not Approved, Revise and Resubmit" at the Project Site or elsewhere where Work is in progress.

F. Other Action: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned marked "Action Not Required".

1.12 DRAWINGS TO BUILDING DEPARTMENT

A. Contractor shall submit three (3) sets of fully addenderized plans and specification to the City of Worcester Building Department upon application for the building permit.

1. Submit drawings to architect prior to permit application for "wet stamping" of architect and engineers professional seal to the drawings. Allow up to three (3) days for this process.

2. Any reduction in addenda plan must be legible.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013000

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for Quality-Control Services.

B. Quality-Control Services include inspections, tests, and related actions, including reports performed by Contractor, by independent agencies, and by governing authorities. They do not include contract enforcement activities performed by Architect.

C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with Contract Document requirements.

D. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.

1. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified inspections, tests, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with Contract Document requirements.
3. Requirements for Contractor to provide quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.3 RESPONSIBILITIES

A. Contractor Responsibilities: The Contractor shall provide inspections, tests, and other similar Quality-Control Services specified in individual Specification Sections and as required by governing authorities. Costs for these services are included in the Contract Sum.

1. The Contractor shall employ and pay a qualified independent testing agency to perform specified Quality-Control Services.
2. Where the Owner has engaged an independent testing agency for testing and inspecting part of the Work, and the Contractor is also required to engage a testing entity for the same or related part or element of the Work, the Contractor shall not employ the entity engaged by the Owner, unless agreed to in writing by the Owner.

3. Re-testing: The Contractor is responsible for retesting where results of inspections, tests, or other quality-control services prove unsatisfactory and indicate noncompliance with Contract Document requirements, regardless of whether the original test was Contractor's responsibility.

    a. The cost of re-testing construction, revised or replaced by the Contractor, is the Contractor's responsibility where required tests performed on original construction.

4. Associated Services: The Contractor shall cooperate with agencies performing required inspections, tests, and similar services, and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include, but are not limited to, the following:

    a. Provide access to the Work and furnish incidental labor, facilities and equipment necessary to facilitate inspections and tests.
    b. Take adequate quantities of representative samples of materials that require testing or assist the agency in taking samples.
    c. Provide facilities for storage and curing of test samples.
    d. Provide security and protection of samples and test equipment at the Project Site.

B. Owner Responsibilities: The Owner will engage and pay for the services of an independent testing agency to perform inspections, tests or other Quality-Control Services specified to be performed by independent testing agencies and not specified as the responsibility of the Contractor and/or are provided for by another identified entity. Costs for these services are not included in the Contract Sum.

    1. The Owner shall employ and pay for the services of a qualified independent testing agency, testing laboratory or other qualified entity to perform Quality-Control Services, which are the Owner’s responsibility.

C. Duties of the Testing Agency: The independent agency engaged to perform inspections, sampling, and testing of materials and construction specified in individual Sections shall cooperate with the Architect and the Contractor in performance of the agency's duties. The testing agency shall provide qualified personnel to perform required inspections and tests.

    1. The agency shall notify the Architect and the Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
    2. The agency is not authorized to release, revoke, alter, or enlarge requirements of the Contract Documents or approve or accept any portion of the Work.
    3. The agency shall not perform any duties of the Contractor.

D. Coordination: Coordinate the sequence of activities to accommodate required services with a minimum of delay. Coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.

1. The Contractor is responsible for scheduling times for inspections, tests, taking samples, and similar activities.

1.4 SUBMITTALS

A. Unless the Contractor is responsible for this service, the independent testing agency shall submit a certified written report, in duplicate, of each inspection, test, or similar service to the Architect. If the Contractor is responsible for the service, submit a certified written report, in duplicate, of each inspection, test, or similar service through the Contractor.

1. Submit additional copies of each written report directly to the governing authority, when the authority so directs.
2. Report Data: Written reports of each inspection, test, or similar service include, but are not limited to, the following:

a. Date of issue.
b. Project title and number.
c. Name, address, and telephone number of testing agency.
d. Dates and locations of samples and tests or inspections.
e. Names of individuals making the inspection or test.
f. Designation of the Work and test method.
g. Identification of product and Specification Section.
h. Complete inspection or test data.
i. Test results and an interpretation of test results.
j. Ambient conditions at the time of sample taking and testing.
k. Comments or professional opinion on whether inspected or tested Work complies with Contract Document requirements.
l. Name and signature of laboratory inspector.
m. Recommendations on retesting.

1.5 QUALITY ASSURANCE

A. Qualifications for Service Agencies: Engage inspection and testing service agencies, including independent testing laboratories, that are prequalified as complying with the American Council of Independent Laboratories' "Recommended Requirements for Independent Laboratory Qualification" and that specialize in the types of inspections and tests to be performed.

1. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the State of Massachusetts.

1.6 WORK CONDITIONS / SEQUENCE

A. If sub-contractors find that conditions are not appropriate for them to begin the work of their trade or if they are directed to perform their work out of sequence by the General Contractor or if the General Contractor directs sub-contractors to start and continue regardless of job conditions, the sub-contractor shall so notify the Architect in writing by certified mail immediately.

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

A. General: Upon completion of inspection, testing, sample taking and similar services, repair damaged construction and restore substrates and finishes.

B. Protect construction exposed by or for quality-control service activities, and protect repaired construction.

C. Repair and protection is Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

END OF SECTION

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. Indicated: The term indicated refers to graphic representations, notes, or schedules on the Drawings, or other Paragraphs or Schedules in the Specifications, and similar requirements in the Contract Documents. Terms such as shown, noted, scheduled, and specified are used to help the reader locate the reference. There is no limitation on location.

C. Directed: Terms such as directed, requested, authorized, selected, approved, required, and permitted mean directed by the Architect, requested by the Architect, and similar phrases.

D. Approved: The term approved, when used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the Architect's duties and responsibilities as stated in the Conditions of the Contract.

E. Regulations: The term regulations includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

F. Furnish: The term furnish means supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations to the location within the project where the product will finally be installed.

G. Install: The term install describes operations at the Project site including the actual unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. Provide: The term provide means to furnish and install, complete and ready for the intended use.

I. Installer: An Installer is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform.

1. The term experienced, when used with the term Installer, means having a minimum of five (5) previous projects similar in size and scope to this Project, being familiar with the special requirements indicated, and having complied with requirements of the authority having jurisdiction.
2. Trades: Using terms such as carpentry is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as carpenter. It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.
3. Assigning Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in those operations. The specialists must be engaged for those activities, and their assignments are requirements over which the Contractor has no choice or option. However, the ultimate responsibility for fulfilling Contract requirements remains with the Contractor.

    a. This requirement shall not be interpreted to conflict with enforcing building codes and similar regulations governing the Work. It is also not intended to interfere with local trade union jurisdictional settlements and similar conventions.

J. Project site is the space available to the Contractor for performing construction activities either exclusively or in conjunction with others performing other work as part of the Project. The extent of the Project site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is located.

K. Testing Agencies: A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.3 SPECIFICATION FORMAT AND CONTENT EXPLANATION

A. Specification Format: These Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 16 Division format and MASTERFORMAT numbering system.

B. Specification Content: This Specification uses certain conventions regarding the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:

1. Abbreviated Language: Language used in Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words that are implied, but not stated, shall be interpolated, as the sense requires. Singular words will be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.
2. Imperative and streamlined language is used generally in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity

to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.

a. The words "shall be" are implied wherever a colon (:) is used within a sentence or phrase.

1.4 INDUSTRY STANDARDS

A. Applicability of Standards: Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with the standards in effect as of the date of the Contract Documents.

C. Conflicting Requirements: Where compliance with two (2) or more standards is specified and where the standards may establish different or conflicting requirements for minimum quantities or quality levels, refer requirements that are different but apparently equal and other uncertainties to the Architect for a decision before proceeding.

1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements. Refer uncertainties to the Architect for a decision before proceeding.

D. Copies of Standards: Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source.

E. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards generating organization, authority having jurisdiction, or other entity applicable to the context of the Text provision. Refer to the "Encyclopedia of Associations", published by Gale Research Co., available in most libraries.

F. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. The following acronyms or abbreviations, as referenced in Contract Documents, are defined to mean the associated names. Names and addresses

are subject to change and are believed, but not ensured, to be accurate and up to date as of the date of Contract Documents.

AA	**Aluminum Association** **900 19th St., NW, Suite 300** **Washington, DC 20006**	**(202) 862-5100**
AABC	**Associated Air Balance Council** **1518 K St., NW** **Washington, DC 20005**	**(202) 737-0202**
AAMA	**American Architectural Manufacturers Association** **1540 E. Dundee Road, Suite 310** **Palatine, IL 60067**	**(708) 202-1350**
AASHTO	**American Association of State Highway and Transportation Officials** **444 North Capitol St., Suite 225** **Washington, DC 20001**	**(202) 624-5800**
AATCC	**American Association of Textile Chemists and Colorists** **P.O. Box 12215** **Research Triangle Park, NC**	**(919) 549-8141**
ACI	**American Concrete Institute** **P.O. Box 19150** **Detroit, MI 48219**	**(313) 532-2600**
ACIL	**American Council of Independent Laboratories** **1629 K St., NW** **Washington, DC 20006**	**(202) 887-5872**
ACPA	**American Concrete Pipe Association** **8300 Boone Blvd., Suite 400** **Vienna, VA 22182**	**(703) 821-1990**
ADC	**Air Diffusion Council** **One Illinois Center, Suite 200** **111 East Wacker Drive** **Chicago, IL 60601-4298**	**(312) 616-0800**
AFBMA	**Anti-Friction Bearing Manufacturers Association** **1101 Connecticut Ave., NW, Suite 700** **Washington, DC 20036**	**(202) 429-5155**
AGA	**American Gas Association** **1515 Wilson Blvd.** **Arlington, VA 22209**	**(703) 841-8400**

AHA	**American Hardboard Association** **520 North Hicks Road** **Palatine, IL 60067**	**(708) 934-8800**
AHAM	**Association of Home Appliance Manufacturers** **20 North Wacker Drive** **Chicago, IL 60606**	**(312) 984-5800**
AI	**Asphalt Institute** **Research Park Drive** **P.O. Box 14052** **Lexington, KY 40512-4052**	**(606) 288-4960**
AIA	**American Institute of Architects** **1735 New York Ave., NW** **Washington, DC 20006**	**(202) 626-7300**
A.I.A.	**American Insurance Association** **1130 Connecticut Ave., NW, Suite 1000** **Washington, DC 20036**	**(202) 828-7100**
AIHA	**American Industrial Hygiene Association** **P.O. Box 8390** **345 White Pond Drive** **Akron, OH 44320**	**(216) 873-2442**
AISC	**American Institute of Steel Construction** **One East Wacker Drive, Suite 3100** **Chicago, IL 60601-2001**	**(312) 670-2400**
AITC	**American Institute of Timber Construction** **11818 SE Mill Plain Blvd., Suite 415** **Vancouver, WA 98684**	**(206) 254-9132**
ALI	**Associated Laboratories, Inc.** **500 South Vermont Street** **Palatine, IL 60067**	**(708) 358-7400**
ALSC	**American Lumber Standards Committee** **P.O. Box 210** **Germantown, MD 20875**	**(301) 972-1700**
AMCA	**Air Movement and Control Association** **30 W. University Drive** **Arlington Heights, IL 60004-1893**	**(708) 394-0150**
ANSI	**American National Standards Institute** **11 West 42nd Street, 13th Floor**	

	New York, NY 10036	**(212) 642-4900**
AOAC	**Association of Official Analytical Chemists** **2200 Wilson Blvd., Suite 400** **Arlington, VA 22201-3301**	**(703) 522-3032**
AOSA	**Association of Official Seed Analysts** **c/o Larry J. Prentice** **268 Plant Science 1ANR-UNL, Box 19281** **Lincoln, NE 68583-0911**	**(402) 472-8649**
APA	**American Plywood Association** **P.O. Box 11700** **Tacoma, WA 98411**	**(206) 565-6600**
API	**American Petroleum Institute** **1220 L St., NW** **Washington, DC 20005**	**(202) 682-8000**
ARI	**Air Conditioning and Refrigeration Institute** **1501 Wilson Blvd., 6th Floor** **Arlington, VA 22209**	**(703) 524-8800**
ARMA	**Asphalt Roofing Manufacturers Association** **6288 Montrose Rd.** **Rockville, MD 20852**	**(301) 231-9050**
ASA	**Acoustical Society of America** **500 Sunnyside Blvd.** **Woodbury, NY 11797**	**(516) 349-7800**
ASC	**Adhesive and Sealant Council** **1627 K Street, NW, Suite 1000** **Washington, DC 20006-1707**	**(202) 452-1500**
ASHRAE	**American Society of Heating, Refrigerating and Air-Conditioning Engineers** **1791 Tullie Circle, NE** **Atlanta, GA 30329**	**(404) 636-8400**
ASME	**American Society of Mechanical Engineers** **345 East 47th St.** **New York, NY 10017**	**(212) 705-7722**
ASPE	**American Society of Plumbing Engineers** **3617 Thousand Oaks Blvd., Suite 210** **Westlake, CA 91362**	**(805) 495-7120**
ASSE	**American Society of Sanitary Engineering**	

	P.O. Box 40362 Bay Village, OH 44140	(216) 835-3040
ASTM	American Society for Testing and Materials 1916 Race St. Philadelphia, PA 19103-1187	(215) 977-9679
ATIS	Alliance for Telecommunications Industry Solutions 1200 G Street, NW, Suite 500 Washington, DC 20005	(202) 628-6380
AWCMA	American Window Covering Manufacturers Association 355 Lexington Avenue New York, NY 10017	(212) 661-4261
AWI	Architectural Woodwork Institute P.O. Box 1550 13924 Braddock Rd., Suite 100 Centreville, VA 22020	(703) 222-1100
AWPA	American Wood Preservers' Association 4128-1/2 California Ave. SW, No. 171 Seattle, WA 98116	(206) 937-5338
AWPB	American Wood Preservers Bureau 4 E. Washington Street Newnan, GA 30263	(404) 254-9877
AWS	American Welding Society 550 LeJeune Road, NW P.O. Box 351040 Miami, FL 33135	(305) 443-9353
AWWA	American Water Works Association 6666 West Quincy Avenue Denver, CO 80235	(303) 794-7711
BHMA	Builders' Hardware Manufacturers Association 355 Lexington Ave., 17th Floor New York, NY 10017	(212) 661-4261
BIA	Brick Institute of America 11490 Commerce Park Drive Reston, VA 22091	(703) 620-0010
BIFMA	Business and Institutional Furniture Manufacturers Assoc. 2335 Burton Street, SE Grand Rapids, MI 49506	(616) 243-1681

CAGI	**Compressed Air and Gas Institute** **c/o John H. Addington** **Thomas Associates, Inc.** **1300 Sumner Avenue** **Cleveland, OH 44115-2851**	**(216) 241-7333**
CAUS	**Color Association of the United States** **409 West 44th Street** **New York, NY 10036**	**(212) 582-6884**
CBM	**Certified Ballast Manufacturers Association** **Hanna Building, No. 772** **1422 Euclid Avenue** **Cleveland, OH 44115-2851**	**(216) 241-0711**
CCC	**Carpet Cushion Council** **P.O. Box 546** **Riverside, CT 06878**	**(203) 637-1312**
CDA	**Copper Development Association** **2 Greenwich Office Park, Box 1840** **Greenwich, CT 06836**	**(203) 625-8210**
CFFA	**Chemical Fabrics & Film Association, Inc.** **c/o Thomas Associates, Inc.** **1300 Sumner Avenue** **Cleveland, OH 44115-2851**	**(216) 241-7333**
CGA	**Compressed Gas Association** **1725 Jefferson Davis Highway, Suite 1004** **Arlington, VA 22202-4100**	**(703) 979-0900**
CISCA	**Ceiling and Interior Systems Construction Association** **5700 Old Orchard Road, 1st Floor** **Skokie, IL 60077**	**(708) 965-2776**
CISPI	**Cast Iron Soil Pipe Institute** **5959 Shallowford Road, Suite 419** **Chattanooga, TN 37421**	**(615) 892-0137**
CRI	**Carpet and Rug Institute** **P.O. Box 2048** **Dalton, GA 30722**	**(404) 278-3176**
CRSI	**Concrete Reinforcing Steel Institute** **933 Plum Grove Road** **Schaumburg, IL 60173**	**(708) 517-1200**

DHI	**Door and Hardware Institute** **14170 New Brook Drive** **Chantilly, VA 22022**	**(703) 222-2010**
DIPRA	**Ductile Iron Pipe Research Association** **245 Riverchase Parkway East, Suite O** **Birmingham, AL 35244**	**(205) 988-9870**
DLPA	**Decorative Laminate Products Association** **600 South Federal Street, Suite 400** **Chicago, IL 60605**	**(312) 922-6222**
ECSA	**Exchange Carriers Standards Association** **5430 Grosvenor Lane, Suite 200** **Bethesda, MD 20814**	**(301) 564-4505**
EIA	**Electronic Industries Association** **2001 Pennsylvania Avenue, NW** **Washington, DC 20006-1813**	**(202) 457-4900**
EIMA	**Exterior Insulation Manufacturers Association** **2759 State Road 580, Suite 112** **Clearwater, FL 34621**	**(813) 726-6477**
EJMA	**Expansion Joint Manufacturers Association** **25 North Broadway** **Tarrytown, NY 10591**	**(914) 332-0040**
ETL	**ETL Testing Laboratories, Inc.** **P.O. Box 2040** **Route 11, Industrial Park** **Cortland, NY 13045**	**(607) 753-6711**
FCI	**Fluid Controls Institute** **P.O. Box 9036** **Morristown, NJ 07960**	**(201) 829-0990**
FCIB	**Floor Covering Installation Board** **310 Holiday Avenue** **Dalton, GA 30720**	**(706) 226-5488**
FGMA	**Flat Glass Marketing Association** **White Lakes Professional Building** **3310 Southwest Harrison** **Topeka, KS 66611-2279**	**(913) 266-7013**
FM	**Factory Mutual Research Organization** **1151 Boston-Providence Turnpike** **P.O. Box 9102**	

	Norwood, MA 02062	**(617) 762-4300**
GA	**Gypsum Association** **810 First Street, NE, Suite 510** **Washington, DC 20002**	**(202) 289-5440**
HEI	**Heat Exchange Institute** **c/o John H. Addington** **Thomas Associates, Inc.** **1300 Sumner Avenue** **Cleveland, OH 44115-2851**	**(216) 241-7333**
HI	**Hydronics Institute** **P.O. Box 218** **35 Russo Place** **Berkeley Heights, NJ 07922**	**(908) 464-8200**
H.I.	**Hydraulic Institute** **30200 Detroit Road** **Cleveland, OH 44145-1967**	**(216) 899-0010**
HMA	**Hardwood Manufacturers Assoc.** **400 Penn Center Blvd.** **Pittsburgh, PA 15235**	**(412) 829-0770**
HPMA	**Hardwood Plywood Manufacturers Assoc.** **1825 Michael Farraday Drive** **P.O. Box 2789** **Reston, VA 22090-2789**	**(703) 435-2900**
IBD	**Institute of Business Designers** **341 Merchandise Mart** **Chicago, IL 60654**	**(312) 647-1950**
ICEA	**Insulated Cable Engineers Association, Inc.** **P.O. Box 440** **South Yarmouth, MA 02664**	**(508) 394-4424**
IEC	**International Electrotechnical Commission** **(Available from ANSI)** **1430 Broadway** **New York, NY 10018**	**(212) 354-3300**
IEEE	**Institute of Electrical and Electronic Engineers** **345 East 47th Street** **New York, NY 10017**	**(212) 705-7900**
IESNA	**Illuminating Engineering Society of North America** **345 East 47th Street**	

	New York, NY 10017	**(212) 705-7926**
IGCC	**Insulating Glass Certification Council c/o ETL Testing Laboratories, Inc. P.O. Box 2040 Route 11, Industrial Park Cortland, NY 13045**	**(607) 753-6711**
IMSA	**International Municipal Signal Association 165 East Union Street P.O. Box 539 Newark, NY 14513**	**(315) 331-2182**
IRI	**Industrial Risk Insurers 85 Woodland Street Hartford, CT 06102**	**(203) 520-7300**
ISA	**Instrument Society of America P.O. Box 12277 67 Alexander Drive Research Triangle Park, NC 27709**	**(919) 549-8411**
KCMA	**Kitchen Cabinet Manufacturers Association 1899 Preston White Drive Reston, VA 22091-4326**	**(703) 264-1690**
LIA	**Lead Industries Association, Inc. 295 Madison Avenue New York, NY 10017**	**(212) 578-4750**
LPI	**Lightning Protection Institute 3365 North Arlington Heights Road, Suite J Arlington Heights, IL 60004**	**(708) 255-3003**
MCAA	**Mechanical Contractors Association of America 1385 Piccard Drive Rockville, MD 20850-4329**	**(301) 869-5800**
ML/SFA	**Metal Lath/Steel Framing Association (A Division of the National Association of Architectural Metal Manufacturers) 600 South Federal Street, Suite 400 Chicago, IL 60605**	**(312) 922-6222**
MSS	**Manufacturers Standardization Society of the Valve and Fittings Industry 127 Park Street, NE Vienna, VA 22180**	**(703) 281-6613**

NAAMM	**National Association of Architectural Metal Manufacturers** **600 South Federal Street, Suite 400** **Chicago, IL 60605**	**(312) 922-6222**
NAIMA	**North American Insulation Manufacturers Association** **44 Canal Center Plaza, Suite 310** **Alexandria, VA 22314**	**(703) 684-0084**
NBHA	**National Builders Hardware Association (Now DHI)**	
NCMA	**National Concrete Masonry Association** **P.O. Box 781** **Herndon, VA 22070-0781**	**(703) 435-4900**
NCRPM	**National Council on Radiation Protection and Measurements** **7910 Woodmont Avenue, Suite 800** **Bethesda, MD 20814**	**(301) 657-2652**
NCSPA	**National Corrugated Steel Pipe Association** **2011 Eye Street, NW** **Washington, DC 20006**	**(202) 223-2217**
NEC	**National Electrical Code (from NFPA)**	
NECA	**National Electrical Contractors Association** **7315 Wisconsin Avenue** **Bethesda, MD 20814**	**(301) 657-3110**
NEMA	**National Electrical Manufacturers Association** **2101 L Street, NW, Suite 300** **Washington, DC 20037**	**(202) 457-8400**
NETA	**International Electrical Testing Association** **P.O. Box 687** **Morrison, CO 80465**	**(303) 467-0526**
NFPA	**National Fire Protection Association** **One Batterymarch Park** **P.O. Box 9101** **Quincy, MA 02269-9101**	**(617) 770-3000** **(800) 344-3555**
N.F.P.A.	**National Forest Products Association** **1250 Connecticut Avenue, NW, Suite 200** **Washington, DC 20036**	**(202) 463-2700**

NHLA	**National Hardwood Lumber Association** **P.O. Box 34518** **Memphis, TN 38184-0518**	**(901) 377-1818**
NKCA	**National Kitchen Cabinet Association** **(Now KCMA)**	
NLGA	**National Lumber Grades Authority** **1055 West Hastings Street, Suite 260** **Vancouver, British Columbia** **Canada V6E 2E9**	**(604) 687-2171**
NOFMA	**National Oak Flooring Manufacturers Association** **P.O. Box 3009** **Memphis, TN 38173-0009**	**(901) 526-5016**
NPA	**National Particleboard Association** **18928 Premiere Court** **Gaithersburg, MD 20879**	**(301) 670-0604**
NPCA	**National Paint and Coatings Association** **1500 Rhode Island Avenue, NW** **Washington, DC 20005**	**(202) 462-6272**
NRCA	**National Roofing Contractors Association** **10255 West Higgins Road, Suite 600** **Rosemont, IL 60018-5607**	**(708) 299-9070**
NSF	**National Sanitation Foundation** **3475 Plymouth Road** **P.O. Box 1468** **Ann Arbor, MI 48106**	**(313) 769-8010**
NWMA	**National Woodwork Manufacturers Association** **(Now NWWDA)**	
NWWDA	**National Wood Window and Door Association** **1400 East Touhy Avenue, #G54** **Des Plaines, IL 60018**	**(708) 299-5200**
PCA	**Portland Cement Association** **5420 Old Orchard Road** **Skokie, IL 60077**	**(708) 966-6200**
PCI	**Precast/Prestressed Concrete Institute** **175 West Jackson Blvd.** **Chicago, IL 60604**	**(312) 786-0300**
PDI	**Plumbing and Drainage Institute**	

	c/o Sol Baker **1106 West 77th Street, South Drive** **Indianapolis, IN 46260**	**(317) 251-6970**
PEI	**Porcelain Enamel Institute** **1101 Connecticut Avenue, NW, Suite 700** **Washington, DC 20036**	**(202) 857-1134**
RFCI	**Resilient Floor Covering Institute** **966 Hungerford Drive, Suite 12-B** **Rockville, MD 20805**	**(301) 340-8580**
RIS	**Redwood Inspection Service** **405 Enfrente Drive, Suite 200** **Novato, CA 94949**	**(415) 382-0662**
RMA	**Rubber Manufacturers Association** **1400 K Street, NW** **Washington DC 20005**	**(202) 682-4800**
SDI	**Steel Deck Institute** **P.O. Box 9506** **Canton, OH 44711**	**(216) 493-7886**
S.D.I.	**Steel Door Institute** **30200 Detroit Road** **Cleveland, OH 44145**	**(216) 889-0010**
SGCC	**Safety Glazing Certification Council** **c/o ETL Testing Laboratories** **Route 11, Industrial Park** **Cortland, NY 13045**	**(607) 753-6711**
SHLMA	**Southern Hardwood Lumber Manufacturers Association** **(Now HMA)**	
SIGMA	**Sealed Insulating Glass Manufacturers Association** **401 North Michigan Avenue** **Chicago, IL 60611**	**(312) 644-6610**
SMA	**Screen Manufacturers Association** **3950 Lake Shore Drive, Suite 502-A** **Chicago, IL 60613-3431**	**(312) 525-2644**
SMACNA	**Sheet Metal and Air Conditioning** **Contractors National Association** **4201 Lafayette Center Drive** **Chantilly, VA 22021**	**(703) 803-2980**

SPIB	**Southern Pine Inspection Bureau** **4709 Scenic Highway** **Pensacola, FL 32504**	**(904) 434-2611**
SPRI	**Single Ply Roofing Institute** **20 Walnut Street** **Wellesley Hills, MA 02189**	**(617) 237-7879**
SSPC	**Steel Structures Painting Council** **4400 Fifth Avenue** **Pittsburgh, PA 15213-2683**	**(412) 268-3327**
SSPMA	**Sump and Sewage Pump Manufacturers Association** **P.O. Box 298** **Winnetka, IL 60093**	**(708) 835-8911**
SWI	**Steel Window Institute** **c/o Thomas Associates, Inc.** **1300 Sumner Ave,** **Cleveland, OH 44115-2851**	**(216) 241-7333**
SWPA	**Submersible Wastewater Pump Association** **600 South Federal Street, Suite 400** **Chicago, IL 60605**	**(312) 922-6222**
TIMA	**Thermal Insulation Manufacturers Association** **29 Bank Street** **Stamford, CT 06901** **(Standards now issued by NAIMA)**	**(203) 324-7533**
TPI	**Truss Plate Institute** **583 D'Onofrio Drive, Suite 200** **Madison, WI 53719**	**(608) 833-5900**
UFAC	**Upholstered Furniture Action Council** **Box 2436** **High Point, NC 27261**	**(919) 885-5065**
UL	**Underwriters Laboratories, Inc.** **333 Pfingsten Road** **Northbrook, IL 60062**	**(708) 272-8800**
USP	**U.S. Pharmacopoeial Convention** **12601 Twinbrook Parkway** **Rockville, MD 20852**	**(301) 881-0666**
WCLIB	**West Coast Lumber Inspection Bureau** **P.O. Box 23145** **Portland, OR 97223**	**(503) 639-0651**

WCMA	**Wallcovering Manufacturers Association** **355 Lexington Avenue, 17th Floor** **New York, NY 10017** **(WCMA has moved from this location, perhaps to the Chicago area. Address and telephone number not confirmed.)**	**(212) 661-4261**
WIC	**Woodwork Institute of California** **P.O. Box 11428** **Fresno, CA 93773-1428**	**(209) 233-9035**
WRI	**Wire Reinforcement Institute** **1101 Connecticut Avenue NW, Suite 700** **Washington, DC 20036-4303**	**(202) 429-5125**
WSC	**Water Systems Council** **600 South Federal Street, Suite 400** **Chicago, IL 60605**	**(312) 922-6222**
WSFI	**Wood and Synthetic Flooring Institute** **4415 West Harrison Street, Suite 242-C** **Hillside, IL 60162**	**(708) 449-2933**
WLPDIA	**Western Lath, Plaster, Drywall Industries Association** **(Formerly California Lath & Plaster Association)** **8635 Navajo Road** **San Diego, CA 92119**	**(619) 466-9070**
WWPA	**Western Wood Products Association** **Yeon Building** **522 SW 5th Avenue** **Portland, OR 97204-2122**	**(503) 224-3930**
W.W.P.A.	**Woven Wire Products Association** **2515 North Nordica Avenue** **Chicago, IL 60635**	**(312) 637-1359**

G. Federal Government Agencies: Names and titles of federal government standard or Specification-producing agencies are often abbreviated. The following acronyms or abbreviations referenced in the Contract Documents indicate names of standard or Specification-producing agencies of the federal government. Names and addresses are subject to change but are believed to be, but are not assured to be, accurate and up to date as of the date of the Contract Documents.

CE	**Corps of Engineers** **(U.S. Department of the Army)** **Chief of Engineers – Referral** **Washington, DC 20314**	**(202) 272-0660**

CFR	**Code of Federal Regulations** **(Available from the Government Printing Office)** **North Capitol Street between G and H Streets, NW** **Washington, DC 20402** **(Material is usually first published in the "Federal Register")**	**(202) 783-3238**
CPSC	**Consumer Product Safety Commission** **5401 Westbard Avenue** **Bethesda, MD 20207**	**(301) 492-6580** **(800) 638-2772**
CS	**Commercial Standard** **(U.S. Department of Commerce)** **Washington, DC 20230**	**(202) 482-2000**
DOC	**U.S. Department of Commerce** **14th Street and Constitution Avenue, NW** **Washington, DC 20230**	**(202) 482-2000**
DOT	**Department of Transportation** **400 Seventh Street, SW** **Washington, DC 20590**	**(202) 366-4000**
EPA	**Environmental Protection Agency** **401 M Street, SW** **Washington, DC 20460**	**(202) 382-2090**
FAA	**Federal Aviation Administration** **(U.S. Department of Transportation)** **800 Independence Avenue, SW** **Washington, DC 20590**	**(202) 366-4000**
FCC	**Federal Communications Commission** **1919 M Street, NW** **Washington, DC 20554**	**(202) 632-7000**
FHA	**Federal Housing Administration** **(U.S. Department of Housing and Urban Development)** **Director, Manufactured Housing and Construction Standards Division** **451 Seventh Street, SW, Room 9158** **Washington, DC 20201**	**(202) 755-5210**
FS	**Federal Specification (from GSA)** **Specifications Unit (WFSIS)** **7th and D Streets, SW** **Washington, DC 20407**	**(202) 708-9205**

GSA	**General Services Administration** **F and 18th Streets, NW** **Washington, DC 20405**	**(202) 708-5082**
MIL	**Military Standardization Documents** **(U.S. Department of Defense)** **Naval Publications and Forms Center** **5801 Tabor Avenue** **Philadelphia, PA 19120**	
NIST	**National Institute of Standards and Technology** **(U.S. Department of Commerce)** **Gaithersburg, MD 20899**	**(301) 975-2000**
OSHA	**Occupational Safety and Health Administration** **(U.S. Department of Labor)** **N3647** **200 Constitution Avenue, NW** **Washington, DC 20210**	**(202) 219-8148**
PS	**Product Standard of NBS** **(U.S. Department of Commerce)** **Washington, DC 20230**	**(202) 482-2000**
REA	**Rural Electrification Administration** **(U.S. Department of Agriculture)** **14th Street and Independence Avenue, SW** **Washington, DC 20250**	**(202) 447-2791**
USDA	**U.S. Department of Agriculture** **14th Street and Independence Avenue, SW** **Washington, DC 20250**	**(202) 447-2791**
USPS	**U.S. Postal Service** **475 L'Enfant Plaza, SW** **Washington, DC 20260-0010**	**(202) 268-2000**

1.5 GOVERNING REGULATIONS AND AUTHORITIES

A. Copies of Regulations: Obtain copies of governing regulations and retain at the Project site to be available for reference by parties who have a reasonable need, if requested by the Architect.

1.6 SUBMITTALS

A. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence, and

records established in conjunction with compliance with standards and regulations bearing upon performance of the Work.

PART 2 – PRODUCTS **(Not Used)**

PART 3 – EXECUTION **(Not Used)**

END OF SECTION

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SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies requirements for temporary services and facilities, including utilities, construction and support facilities, security and protection.

B. Temporary utilities required include, but are not limited to:

1. Temporary power and lighting as specified in Division 260000.

2. Temporary heat & winter conditions.

C. Temporary construction and support facilities required include, but are not limited to:

1. Waste disposal services.
2. Temporary yard and storage on and off-site.
3. Construction aids and miscellaneous services and facilities.
4. Sweeping compound.
5. Emergency portable generators of size required, if permanent power is temporarily unavailable.
6. Water service and distribution, if water supply to adjacent occupied spaces is temporarily unavailable.
7. Parking

D. Security and protection facilities required include, but are not limited to:

1. Temporary weather protection, enclosures, and covers.
2. Temporary fire protection and fire watch if required by Worcester Fire Deparment.
3. Barricades, warning signs, lights.
4. Temporary partitions between occupied areas and construction areas, STC 48 or better.

E. Where a distinction is made in this specification section between temporary services to be provided by a General Contractor and those to be provided by a Subcontractor, the purpose is only to clarify which costs are to be included by the applicable parties for inclusion in the applicable bids and contracts that would follow. These distinctions have no bearing upon the Contract between the Owner and General Contractor and do not limit in any way the General Contractor's responsibility to provide all such temporary services without additional cost to the Owner. For the sake of clarity in this specification section, the term General Contractor has been

used for the person called the Contractor in other specification sections, when the intent is that that person shall provide a service directly at his own expense rather than at the expense of one of the Subcontractors from whom the Owner has taken filed sub-bids.

F. The temporary services describes in this specification section may not be adequate to provide for all of the needs of the General Contractor or all Subcontractors, but are intended only to provide a basis for obtaining filed sub-bids. The General Contractor or any Subcontractor requiring additional temporary services for the proper execution of his work or because of climatic conditions shall arrange for and obtain such services at his own expense without further compensation by the Owner.

G. The Contractor shall be responsible for restoring all landscaped areas affected by the work of this project to their original "like-new" state that existed prior to work commencing. This restoration work shall include, but not be limited to, planting beds with mulch, trees, shrubs, and lawn areas. Great care should be taken during the course of the work to not damage nor destroy any landscaping impacted by this work. Any landscaping disturbed, damaged, or destroyed shall be restored, repaired, or replaced in-kind at no cost to the Owner.

1.3 SUBMITTALS

A. Schedule: Submit a schedule indicating implementation and termination of each temporary utility within fifteen (15) days of date established for Commencement of the Work.

1.4 QUALITY ASSURANCE

A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction, including but not limited to:

1. Commonwealth of Massachusetts State Building Code requirements; 10th Edition.
2. Federal, State and City Health and safety regulations.
3. Utility company regulations.
4. Police, Fire Department and Rescue Squad rules.
5. Environmental protection regulations.

B. Standards: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction, including but not limited to:

1. NFPA Code 241.
2. NFPA 70.
3. ANSI A10.
4. NECA NJG-6.

C. Electric Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70.

D. Inspections: Arrange for authorities having jurisdiction to inspect and test temporary utilities prior to use. Obtain required certifications and permits.

1.5 PROJECT CONDITIONS

A. Temporary Utilities: At earliest feasible time, when acceptable to Owner, change from use of temporary service to use of permanent service.

B. Conditions of Use: Maintain temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload temporary facilities, or permit them to interfere with progress. Do not allow hazardous, dangerous, unsanitary conditions, or public nuisances to develop or persist on the site.

C. Maintain the continuity of all utility services at all times across all Phases of the Construction Project, unless otherwise directed by the Architect or Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide new materials suitable for the use intended, must not create unsafe conditions, and must not violate requirements of applicable codes and standards.

2.2 TEMPORARY WATER

A. Definitions:
   1. Water Access Point: A point, within the Project area, at which water is available during construction.

B. Charges: The General Contractor shall pay for all facilities to provide water during construction, while the Owner will supply and pay for water during the construction. The General Contractors shall pay for backflow preventer if utilizing Owners Hydrant for water.

   1. The furnishing of water by the Owner shall be conditional upon all contractors being conservative and prudent in its use. In the event of any contractor is repeatedly wasteful in the use of water thus provided, the Owner reserves the right to charge the General Contractor for wasteful usage at an equitable rate for the additional portion of water used.

C. Temporary Water: The General Contractor shall be responsible for all facilities to provide water during construction as defined above and further specified as follows:

   1. Except under unusual circumstances, when otherwise specified or approved by the Architect, all water shall be of potable quality.
   2. The General Contractor shall provide all necessary piping, valving, hose bibbs, hosing, etc. to provide temporary water during construction from a water access point determined by the Owner’s Representative. Any facilities running within

the building are required not to leak. Any damage incurred due to leaks shall be repaired at the expense of the General Contractor.

3. The General Contractor shall pay for and be responsible for the protection of Temporary Water, which he installs, from freezing and other damage.

2.3 TEMPORARY HEAT

A. Definitions:

1. Temporary Heating & Ventilating: The General Contractor shall provide temporary heat and ventilation, as needed, to work areas outside the building to maintain minimum temperatures described below. The General Contractor shall also provide temporary heat and ventilation, as needed, to work areas inside the building to maintain an indoor temperature of 68 degrees Fahrenheit during the winter months and 75 degrees Fahrenheit during the summer months.

B. Charges: The General Contractor shall pay for all temporary heat and ventilation as defined above. The General Contractor shall pay for all fuel required for Temporary Heat and Ventilation. The Owner shall pay for all electrical energy use charges.

1. The furnishing of electrical energy by the Owner shall be conditional upon being conservative and prudent in its use. In the event that any contractor is repeatedly wasteful in the use of electrical energy thus provided, the Owner reserves the right to charge the General Contractor at an equitable rate for the additional portion of electrical energy used.

C. Temporary Heating: Portable heating units shall be of sufficient capacity and number and shall be located so that damage to any part of the project from low temperature will be prevented and that concrete, masonry, and other components requiring curing shall be properly cured.

1. Heaters for temporary heat shall be temporary steam generators, forced air heaters, or other type heaters located outside the building or vented to the outside of the building. Type(s) shall be such as to not damage or stain construction or any part of the existing building. Heaters must be UL approved.
2. At no time will oil-burning “salamander” type heaters be used, nor will non-vented, open flame heaters be used inside the building.
3. Propane-type heaters shall not be used at anytime within the area of the building or near stockpiles of combustible materials.
4. Temporary heating shall apply to winter conditions.

D. Temporary Ventilation: Portable ventilation units shall be of sufficient capacity and number and shall be located so that damage to any part of the project from excess humidity will be prevented and that concrete, masonry, and other components requiring curing shall be properly cured.

2.4 TEMPORARY POWER AND LIGHTING

A. Definitions:

1. Temporary Electric: The furnishing, installing, maintenance, and removal of all wiring, fusing, switches, outlets, lamps, and accessory electrical devices required to provide lighting and power needed by all construction trades for the duration of construction.

B. Charges: Owner shall pay for all use charges for electrical energy.

1. The furnishing of electrical energy by the Owner shall be conditional upon all contractors being conservative and prudent in its use. In the event that any contractor is repeatedly wasteful in the use of electrical energy thus provided, the Owner reserves the right to charge the General Contractor at an equitable rate for the additional portion of energy consumed.

C. Temporary Electricity: The building already has a functioning electrical system, and temporary electrical service is not required. The Contractor may use power where it exists within the building. Use of cordless tools is strongly encouraged. Should modification of the electrical panel or service be required to power certain tools, the Electrical Sub-Contractor shall make any required revisions and restore the system to original condition after the need for the specialized power has ended.

1. Alternatively, portable generators may be used.

D. The General Contractor shall pay for and be responsible for Temporary Electric as defined above and further specified as follows:

1. Responsibility of compliance with local, state, and national codes for installation of the Temporary Electric service shall be borne by the Electrical Sub-Contractor.

2. The General Contractor shall pay for the following Temporary Electricity. This schedule will not necessarily provide for all requirements of all contractors. The General Contractor or any Subcontractor having requirements for power, lighting, or service other than those provided herein, shall make the necessary arrangements to obtain such power, lighting, or service at his own expense.

a. The General Contractor shall obtain all necessary permits, shall furnish and install the temporary electrical power and lighting systems, and shall pay for all labor, materials, and equipment required for this work. All such temporary electrical work shall meet the requirements of the Massachusetts Electrical Code and OSHA.

b. The Electrical Subcontractor shall furnish and install a feeder, or feeders, of sufficient capacity to provide additional lighting to the work areas, as required, to properly carryout the work. Temporary lighting shall be based on the following requirements:

c. All Contractors and Subcontractors shall, individually, furnish all extension cords and lamps, sockets, motors, and accessories required for their work.

1) All Electrical Power Cords shall be grounded extension cords that are "hard-service" type where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas where construction activities are in progress.

d. Any of the Contractors or Subcontractors shall reimburse the General Contractor for any of the following:

1) Any temporary wiring of a special nature, other than that specified above, required for their work.
2) Any temporary wiring of construction offices and buildings used by them.
3) Any temporary wiring for protective night lighting.

e. The General Contractor shall be responsible for removing all temporary wiring, service equipment, and accessories when and as directed to by the General Contractor.

f. The provisions of the Massachusetts Electrical Code shall be strictly complied with respect to Article 305 of said code, and the following precautions shall be taken:
1) Open conductors shall be fastened at the ceiling height at minimum of 10 feet intervals. Conductors may not be laid on the floor, and receptacles or fixed equipment circuits shall contain a separate equipment-grounding conductor if run as open wiring. Receptacles shall be of the grounding type. Branch circuits shall also be of the grounding type, unless installed in a complete metallic conductor and receptacles electrically connected to the grounding conductor. Neither bare conductors nor earth returns shall be used for wiring of any temporary circuits. Grounding circuits shall never be interrupted.
2) All 15 and 20 amp receptacle outlets on single phase circuits which are used for construction purposes shall be equipped with ground-fault circuit interrupters, reset button, and pilot lights; as required by Article 210 of the Massachusetts Electrical Code.
3) All outlets shall be properly configured NEMA polarized outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets.

2.5 TEMPORARY SANITARY FACILTIES

1. The General Contractor shall provide ample toilet facilities with proper enclosures for the use of workmen employed on the work to be as located within the construction areas on site where permitted by the Architect.

a. Provide the Architect with a schedule of maintenance and cleaning. Provide toilet facilities with hand washing sanitizer dispenser, paper towels, and cleaners.

b. Toilet facilities shall be installed and maintained in conformity with the governing laws and building code. They shall be properly lit, ventilated, and kept clean at all times.

c. At no time shall any Contractor Personnel use toilet facilities outside the work areas or in any Owner occupied parts of the building.

2.6 TEMPORARY WEATHER PROTECTION

A. Definitions:

1. Weather Protection: The furnishing, installing, maintenance, and removal of temporary closures, covers, shields, and any other weather protection devices as required to protect work in place and permit construction to proceed during cold or inclement weather.

2. The project area is an unconditioned, open-air garage. It is not the intention of this section to require weather protection for the entire building envelope. Protect work as required, when performed in inclement conditions.

B. Weather Protection Standard: The following weather protection standards pursuant to Chapter 597 of the Acts of 1980, modifying Sections 44F and G of Chapter 149 of the General Laws, are hereby incorporated into this specification, and shall be considered supplementary to the temporary heating and temporary enclosure requirements. Under the provisions of Chapter 149, Section 44F(I) and Section 44G, Paragraph D, of the General Laws, General Contractors are required to provide weather protection to allow building construction to be carried on during the months of November through March. These standards do not require enclosures for heat for operations that are not economically feasible to protect in the judgment of the Awarding Authority; including for example, site work, excavation, pile driving, steel erection, erection of certain exterior panels, roofing, and the like.
1. The General Contractor shall provide and install weather protection.
2. Weather protection shall be provided during the months of November through March.
3. Temperature at the working surface shall be at least forty degrees Fahrenheit (40° F). This provision does not supercede any specific greater requirements for the methods of construction or curing of materials.
4. Weather protection materials, equipment, and the installation thereof, shall comply with all safety rules and regulations including the provisions for adequate ventilation and fire protection devices.
5. At completion of work, the General Contractor shall remove temporary weather protection and restore all surfaces to first class condition.
6. The General Contractor may choose, if the Awarding Authority approves, to use the permanent heating system for temporary heat after the building is enclosed and the system has been tested and is ready to operate.
   a. The General Contractor shall thoroughly clean and restore to first class condition, acceptable to the Awarding Authority, all portions of the permanent heating system that are used for heating during construction.
   b. Use of the permanent heating system for weather protection shall not affect any heating system guarantee that may be due to the Awarding Authority;

such guarantee shall begin to run only when the Awarding Authority accepts the building.

7. Reporting Requirements:
   a. Within thirty (30) calendar days after Contract Award the General Contractor shall submit, in writing to the Awarding Authority for approval, its proposed plan for weather protection. Refer to Section 01300 – Submittals for additional information regarding the appropriate procedure in preparing this submittal.
   b. The General Contractor shall furnish and install accurate Fahrenheit thermometers at places designated by the Awarding Authority to determine whether the required temperature is being maintained.

C. Temporary Covers and Enclosures:

1. Except as otherwise specified herein below, all costs of closing openings in new construction and the exterior of the existing buildings where opened to the weather, including temporary covers and enclosures, shall be borne by the General Contractor. Enclosures must be built around various portions of the new construction and new exterior openings in the existing building as the work progresses if, and as necessary to totally insure against the intrusion of rain, snow, and other moisture which might damage the new or existing materials or finishes and as necessary to maintain the minimum temperatures specified.
   a. Where roofs, exterior walls, windows, or other elements of new or existing buildings or structures providing weather protection are to be temporarily opened to the weather, they shall be fully enclosed or covered with securely attached and well draining enclosures whenever inclement weather is occurring or is threatening, to assure absolute weather protection. Any and all damage to the new or existing buildings or structures, including all materials and finishes thereon, caused by inadequate protection shall be made good by the General Contractor without further cost to the Owner.
2. All such weather tight enclosures shall provide a reasonable open area to permit drying of new wet materials while at the same time making it possible to maintain the required interior temperatures. The General Contractor shall provide sufficient continuous ventilation until the time that the “wet” work of the project has dried sufficiently to receive finished woodwork and other materials subject to moisture damage, at which time the ventilation shall be maintained at approximately the anticipated conditions of final use of the project.
3. The permanent doors and frames shall not be used as temporary enclosures prior to the time of delivery of finished woodwork or acoustical materials. Temporary wood or plywood doors with wood frames and proper hardware to make the doors self-closing shall be provided, instead, at the door openings.
4. As parts of the temporary enclosures, the permanent doors, windows, and fixed glass may be used, provided sufficient ventilation area is available and that extreme care is taken to prevent damage to the same. Where available ventilation area is limited, intake and discharge fans may be used to increase air movement through the construction areas. Before delivery of finished woodwork or other materials subject to moisture damage, the permanent windows, roof accessories, fixed glass, doors, and entrances must be in place. Spark-proof fans shall also be provided to remove toxic or obnoxious fumes from enclosed areas as may be required.

5. Once temporary enclosures are in place, a temperature of at least 55 degrees Fahrenheit shall be maintained within all interior workspaces. From time of delivery of first shipment of finished woodwork or other finished materials subject to moisture damage, a temperature of at least 60 degrees Fahrenheit shall be maintained within all interior spaces. Temperatures shall be maintained at this level until time of substantial completion of the project or occupancy by the Owner, whichever is sooner, and shall not be discontinued until definite arrangements for same have been made by the Owner.

D. Weather Protection by Subcontractors: The General Contractor shall provide at his own expense all Weather Protection as defined above except as follows:

1. Each Subcontractor shall pay for and be responsible for the weather protection of his tools, devices, equipment, appliances, and appurtenances to used in the accomplishment of his work and for weather protection of materials furnished by him until such materials are incorporated as a physical part of the Project.
2. Protection and heating of aggregates and water for concrete and mortars shall be the responsibility and at the expense of the respective Subcontractors furnishing concrete and mortars.
3. Construction Water Facilities, furnished and installed by the General Contractor, shall be protected against freezing by the Contractor at his own expense.
4. Hoses, piping, and accessory devices installed and connected by others to the water facilities furnished by the Contractor shall be protected against freezing by the installer at his own expense.

2.7 TEMPORARY FIRE PROTECTION

A. The General Contractor shall take all necessary precautions for the prevention of fire during construction. He shall be responsible that the area within the contract limits is kept orderly and clean and that combustible rubbish is promptly removed from the site. Combustible materials shall be stored on site in a manner and at locations approved by the Architect. The General Contractor shall comply with all suggestions regarding fire protection made by the Insurance Company with which the Owner maintains his fire insurance.

B. The General Contractor shall provide and maintain in good working order, under all conditions, readily available to all portions of the site and work, suitable and adequate fire protection equipment and services. Such facilities shall include, but are not limited to, the furnishing and maintaining in good working order a minimum of two (2) standard, Underwriters' Laboratories labeled, 2-1/2 gallon capacity fire extinguishers per floor.

C. Smoking shall be prohibited on the premises and signs to this effect shall be posted conspicuously.

D. Fires shall not be built on the premises.

2.8 TEMPORARY CRANES, LIFTS, DERRICKS, AND HOISTING SERVICES

A. The General Contractor shall furnish, install, operate, and maintain in safe condition all crane services outside of the building for his own use and for the use of all Subcontractors on the project to properly carry out and complete the work, except as may otherwise be specifically provided for in any of the trade sections of the Specifications.

B. All crane services shall be provided at no cost to the Subcontractors for their work.

C. Each Subcontractor shall, however, provide their own lifts, derricks, hoisting services, etc. (excluding crane services outside the building) for their own work outside and inside the building to properly complete their work.

D. All cranes, lifts, derricks, and hoisting equipment, machinery, and operation shall comply in all respects to the governing laws and codes.

2.9 TEMPORARY STAGING AND SCAFFOLDING

A. The General Contractor shall furnish, erect, and maintain in safe condition all exterior and interior staging and scaffolding required for his own use.

B. Each of the Subcontractors shall furnish, erect, and maintain in safe condition all exterior and interior staging and scaffolding for their own use.

C. All staging and scaffolding shall be enclosed at the ground by a temporary construction fence as defined elsewhere in this Section.

D. Staging and scaffolding shall comply in all respects to the governing laws and codes.

2.10 TEMPORARY BRACING, SHORING, SHEETING, AND TIE-DOWNS

A. The General Contractor shall take all precautions to protect the Work against collapse or other damage by earth or construction loads, high winds, snow and rain loads, damage by adverse weather conditions or geological disturbances, or other cause, by temporary bracing shoring, sheeting, guying, lacing, covering, weighting, and other reasonable and prudent means.

2.11 TEMPORARY STAIRS, LADDERS, RAMPS, PLATFORMS, ETC.

A. The General Contractor shall provide and maintain all necessary temporary stairs, ladders, ramps, platforms, and other temporary construction required for the proper execution of the work, all of which shall comply with requirements of the governing laws and codes and/or as required by local building officials.

B. As soon as the permanent ladders and hatches are installed, the General Contractor shall provide temporary protective measures acceptable to the Architect to maintain their new condition until substantial completion, so to assure that such items will not be damaged as the remaining work progresses.

2.12 TEMPORARY FENCING, BARRIERS, AND PARTITIONS

A. Protection: The General Contractor shall be fully responsible for security of the work areas of the site and for patrolling and protecting the work under construction and his and the Owner's materials stored or otherwise located on the site.

B. Temporary Barricading: In addition, the General Contractor shall provide other temporary fencing, barricading, and overhead protection of substantial nature to protect workmen, other personnel, and the public against various hazards and attendant nuisances that come about as the work progresses such as, but not necessarily limited to, falling materials, dangerous excavations, dangerous projections or obstructions, stored or stock piled materials, etc. Comply fully with recommendations of the Association of General Contractors and provisions of the governing laws and codes.

Note: As part of requirement for overhead protection, include substantial, well constructed, walkways covers sufficient to assure pedestrian safety, in accordance with recommendations of the Association of General Contractors and provisions of the governing laws and codes.

C. In addition, the General Contractor shall provide all necessary protective barriers within the existing building as required to assure the safety of persons and property wherever work of this Contract is being carried out. Include substantial, well constructed, protective barriers at all construction work-limit-lines separating Contract work areas from areas occupied by the Owner. Also include flameproof dust-curtaining and block or filter mechanical return air systems in a safe manner, in cooperation with Mechanical trade, between areas where dust effusive work is being carried out and other interior areas of the new addition and existing building to prevent passage of dirt and dust. Barriers, curtaining, etc., must be self-supporting, and must not depend on building construction for primary structure or anchorage. Locations and quantities of barriers and dust curtaining shall at all times be subject to Owner's and Architect's approval, but such approval, or lack of inspection or approval, by the Owner or the Architect, shall not be construed as relieving the Contractor of any of his responsibilities under the Contract.

2.13 TEMPORARY STORAGE FACILITIES

A. Space for storage of materials shall be confined to the construction areas outside the building and as designated and/or approved by the Architect.

B. Locations where construction equipment may be stored during non-working hours shall be as acceptable to the Owner. Construction equipment shall not present a hazard when stored.

2.14 NOISE, DUST, AND POLLUTION CONTROL

A. All work performed under the Contract shall conform to the requirements of Chapter III, Section 31C and Section 142D of the General Laws, Commonwealth of Massachusetts and Rules and Regulations adopted thereto by the Commonwealth of Massachusetts, Department of Public Health, and the requirements of local noise, dust, and pollution control laws, ordinances, and regulative agencies applicable to the work.

B. The General Contractor shall provide temporary partitions to prevent noise, dust, pollution or order from entering occupied spaces. Temporary partitions shall have STC of 50. Submit location plan and type of construction for temporary partitions for approval.

C. Control of air borne dust or pollution from the site with spray or as otherwise may be necessary to prevent the migration of any dust or pollutants.

D. Dust Control: Use water mist, temporary enclosures, and other suitable methods to limit spread of dust and dirt. Comply with governing environmental protection regulations.

1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, or pollution.
2. Vacuum equipment shall be equipped with HEPA filters.
3. Vacuum carpeted areas.
4. Wet mop floors to eliminate trackable dirt.
5. Sweeping shall be allowed only with the use of a non-oil based sweeping compound followed by vacuuming any remaining residue.
6. Wipe down walls and doors of demolition enclosure.

E. Disposal: Remove and transport debris, in a manner that will prevent spillage on adjacent surfaces and areas, to the construction dumpster(s).

F. Cleaning: Clean areas adjacent to the work area of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

2.15 WATER CONTROL

A. The General Contractor shall be responsible for site drainage and snow removal within the limit-of-work lines and shall maintain such drainage and removal during the life of the Contract in a manner approved by the Owner and Architect, and so as not to adversely affect the adjacent areas.

B. Water from the Work of this Project shall be disposed of in such a manner as not to be a threat to public health nor cause damage to public or private property. It shall not be disposed of over surfaces of roads, walks, and streets, nor be permitted to cause any interference with the normal use of the same.

C. Removal of snow and ice from within the limit-of-work lines at the site as required to maintain the continual progress of the work, including that required to keep work areas, access roads, and storage areas clear, free, and in use, and as required to prevent damage to existing construction and new work in places.

2.16 CONSTRUCTION CLEANING AND CONSTRUCTION DUMPSTERS

A. The General Contractor shall provide and pay for temporary dumpster type trash containers outside the building for use by all Subcontractors, and shall have the

containers replaced, hauled away, and the contents legally disposed of at sufficient intervals to maintain them at all times in sufficiently empty condition that they are ready to receive trash and debris.

B. All construction dumpsters shall be located in the parking lot within the construction staging area and where permitted by the Owner.

C. Each Contractor on the project shall be responsible for removing their own trash and debris from the building to the construction dumpster(s).

D. Waste materials and rubbish, which might otherwise raise dust, shall be sprinkled during handling and loading to minimize this effect. Debris shall be carried out of the structure in containers or dropped in fully enclosed chutes and shall not be passed through, or thrown from, windows or other wall openings, and in no case shall the debris or trash be permitted to drop freely from the openings.

E. The Work Areas shall be inspected daily and all debris, waste, rubbish, etc. shall be removed and placed in a dumpster.

F. All waste materials and rubbish shall be disposed of legally, off the site.

2.17 TEMPORARY RODENT AND PEST CONTROL

A. Rodent and Pest Control: Not required.

2.18 WATCHMEN, FLAGMEN, AND POLICE DETAILS

A. The General Contractor shall provide the services of flagmen, traffic directors, and police details as necessary and as required by authorities having jurisdiction. Please refer to Section 01010 – Summary of Work for additional information regarding the police details and the appropriate pay rates.

2.19 PARKING

A. Parking will be permitted on site or as directed by the owner.

PART 3 - EXECUTION

3.1 OPERATION, TERMINATION AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.

B. Maintenance: Maintain facilities in good operating condition, until removal. Protect from damage. If damage occurs, repair immediately upon discovery. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour per day basis.

C. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended. Clean and renovate permanent facilities that have been used during construction period.

END OF SECTION

SECTION 016000 – PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements governing the Contractor's selection of products for use in the Project.

B. Reference Standards and Definitions: Refer to Section 014200 “References” for the applicability of industry standards to products specified.

C. The Contractor’s Construction Schedule and the Submittal Schedule are specified under Section 013300 “Submittals Procedures”.

D. Administration procedures for handling requests for substitutions made after award of the Contract are specified under Section 012500 “Substitution Procedures”.

1.3 DEFINITIONS

A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties", "systems", "structure", "finishes", "accessories", and similar terms. Such terms are self-explanatory and have well-recognized meanings in the construction industry.

1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material", "equipment", "system", and terms of similar intent.

   a. "Named Products" are items identified by the manufacturer's product name, including make or model number or other designation, shown or listed in the manufacturer's published product literature that is current as of the date of the Contract Documents.

2. "Materials" are products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.

3. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections, such as wiring or piping.

1.4 SUBMITTALS

A. Product List: Prepare a schedule in tabular form showing each product listed. Include the manufacturer's name and proprietary product names for each item listed.

1. Coordinate product list with the Contractor's Construction Schedule and the Schedule of Submittals.
2. Form: Prepare product list with information on each item tabulated under the following column headings:

   a. Related Specification Section number.
   b. Generic name used in Contract Documents.
   c. Proprietary name, model number, and similar designations.
   d. Manufacturer's name and address.
   e. Supplier's name and address.
   f. Installer's name and address.
   g. Projected delivery date or time span of delivery period.
   h. Specific Product “Material Safety Data Sheet” reference.

3. Submittal: Within twenty (20) days after date of commencement of the Work, submit four (4) copies of an initial product list. Provide a written explanation for omissions of data and for known variations from Contract requirements.

   a. At the Contractor's option, the initial submittal may be limited to product selections and designations that must be established early in the Contract period.

4. Architect's Action: The Architect will respond in writing to Contractor. No response constitutes no objection to listed manufacturers or products but does not constitute a waiver of the requirement that products comply with Contract Documents. The Architect's response will include the following:

   a. A list of unacceptable product selections, containing a brief explanation of reasons for this action.

1.5 MATERIAL SAFETY DATA SHEETS MANUAL

A. Within ten (10) days after submission of Product List Schedule and before materials may be delivered to jobsite, submit one (1) or more 8 ½ x 11 paper size three (3) ring binder with the Product List Schedule and Material Safety Data Sheet for each product. Using the Product List Schedule as table of contents arrange Materials Safety Data Sheets in table of contents order.

B. Submit one (1) copy of materials Safety Data Sheet Manual to Clerk of the Works and Architect.

1. Provide one (1) copy of Material Safety Data Sheets for insertion in Manual for products listed on additional Product List Schedules.

C. This requirement is in addition to any obligation the Contractor has to maintain Material Safety Data Sheets at job site or elsewhere.

1.6 QUALITY ASSURANCE

A. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source.

1. When specified products are available only from sources that do not, or cannot, produce a quantity adequate to complete project requirements in a timely manner, consult with the Architect to determine the most important product qualities before proceeding. Qualities may include attributes, such as visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources producing products that possess these qualities, to the fullest extent possible.

B. Compatibility of Options: When the Contractor is given the option of selecting between two (2) or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

1.7 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.

1. Schedule delivery to minimize long-term storage at the site.
2. Coordinate delivery with installation time.
3. Deliver products to the site in an undamaged condition in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
5. Store products at the site in a manner that will facilitate inspection.

6. Store and maintain products within acceptable environmental ranges and conditions required by manufacturer’s instructions.

1.8 WORK CONDITIONS / SEQUENCE

A. If sub-contractors find that conditions are not appropriate for them to begin the work of their trade or if they are directed to perform their work out of sequence by the General Contractor or if the General Contractor directs sub-contractors to start and continue regardless of job conditions, the sub-contractor shall so notify the Architect in writing by certified mail immediately.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation.

   1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.

B. Product Selection Procedures: Product Selection is governed by the Contract Documents and governing regulations; not by previous project experience. Procedures governing product selection include the following:

   1. Where products or manufacturers are specified by name, accompanied by the term "or equal" or "or approved equal", comply with the Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
   2. Non-proprietary Specifications: When Specifications list products or manufacturers that are available and may be incorporated in the Work, they do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
   3. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.
   4. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by the manufacturer for the application indicated. General overall performance of a Product is implied where the product is specified for a specific application.

      a. Manufacturer's recommendations may be contained in published product literature or by the manufacturer's certification of performance.

   5. Compliance with Standards, Codes, and Regulations: Where the Specifications only require compliance with an imposed code, standard, or regulation, select a product that complies with the standards, codes, or regulations specified.
   6. Visual Matching: Where Specifications require matching an established Sample, the Architect's decision will be final on whether a proposed product matches satisfactorily.

      a. Where no product available within the specified category matches satisfactorily and complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category, or for non-compliance with specified requirements.

7. Visual Selection: Where specified product requirements include the phrase "... as selected from manufacturer's standard colors, patterns, textures..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Architect will select the color, pattern, and texture from the product line selected.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS

A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.

1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION

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SECTION 017400 - WARRANTIES AND BONDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for warranties required by the Contract Documents, including manufacturer’s standard warranties on products and special warranties.

1. Refer to the General Conditions for terms of the Contractor's special warranty on workmanship and materials.

B. General Closeout requirements and procedures are included in Section 017000 “Project Closeout”.

1. Specific requirements for warranties on products and installations specified to be warranted are included in the individual Sections of Divisions 2 through 16.
2. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.

C. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

D. Separate Prime Contracts: Each prime contractor is responsible for warranties related to its own contract.

1.3 DEFINITIONS

A. Standard Product Warranties are pre-printed written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.

B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1.4 WARRANTY REQUIREMENTS

A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.

B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation, as determined by the Architect.

C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.

1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

E. The Owner reserves the right to refuse to accept the Work for the Project where a special warranty, certification or similar commitment on the Work or part of the Work is required, until the Contractor presents evidence that entities required to countersign such commitments are willing to do so.

1.5 SUBMITTALS

A. Submit written warranties to the Architect bound in the Project Closeout Manual as described in Section 017700 – Closeout Procedures. If the Architect's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Architect.

1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Architect within ten (10) days of completion of that designated portion of the Work.

B. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties, submit a draft to the Architect, for approval prior to final execution.

C. Prepare a written document utilizing the appropriate form, ready for execution by the Contractor, or by the Contractor and subcontractor, supplier, or manufacturer. Submit a draft to the Architect for approval prior to final execution.

1. Refer to individual Sections of Divisions 2 through 16 for specific content requirements and particular requirements for submitting special warranties.

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 WARRANTIES

A. Schedule: Provide warranties on products and installations as specified in the appropriate Sections of the Specification.

1. When products, equipment, or materials fail and/or continue to be a repetitive source of problems, with no satisfactory resolution (e.g. HVAC Equipment) during the warranty period, the Owner reserves the right to extend the period of time of the initial warranty period. If no satisfactory resolution can be reached during this resolution period, then the Owner reserves the right to demand for the full replacement of the particular item in question, including all associated work required to execute this replacement at no cost to the Owner.

END OF SECTION

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SECTION 017700 – CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout including, but not limited to, the following:

1. Inspection procedures.
2. Contractor's monetized punchlist.
3. Project Record Document Submittal.
4. Project Closeout Manual Submittal.
5. Final cleaning.

B. Closeout requirements for specific construction activities are included in the appropriate Sections in Divisions 2 through 28.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request for which the architect shall review and/or approve.

1. The contractor shall prepare and submit a monetized punchlist. No exceptions will be considered.
2. In the Application for Payment that coincides with, or first allows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete.

   a. If 100 percent completion cannot be shown, the contractor shall provide his monetized punchlist including, but not limited to, the following:

      1) A list of incomplete items.
      2) The value of each incomplete item.
      3) A Reason each item is not complete.

3. Advise the Owner of pending insurance changeover requirements.
4. Submit application for reduction of retainage.
5. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents, as further described below.

6. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
7. Submit record drawings, maintenance manuals, damage or settlement surveys, and similar final record information, as further described below.
8. Deliver tools, spare parts, extra stock, and similar items.
9. Make final changeover of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of changeover in security provisions.
10. Complete startup testing of systems and instruction of the Owner's operation and maintenance personnel. Discontinue and remove temporary facilities from the site, along with mockups, construction tools, and similar elements.
11. Complete final cleanup requirements, including touch-up painting.
12. Touch-up and otherwise repair and restore, marred, exposed finishes.

B. Inspection Procedures: On receipt of a request for inspection, the Architect will either proceed with inspection or advise the Contractor of unfilled requirements. The Architect will prepare the Certificate of Substantial Completion following inspection or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.

1. The Architect will repeat inspection when requested and assured that the Work has been substantially completed.
2. Results of the completed inspection will form the basis of requirements for final acceptance.

1.4 FINAL ACCEPTANCE

A. Preliminary procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.

1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted.
2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
3. Submit a certified copy of the Architect's final inspection list of items to be completed or corrected, endorsed and dated by the Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by the Architect.
4. Submit consent to surety of final payment.
5. Submit a final liquidated damages settlement statement.
6. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Re-inspection Procedure: The Architect will re-inspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to the Architect.

1. Upon completion of re-inspection, the Architect will prepare a certificate of final acceptance. If the Work is incomplete, the Architect will advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled, but are required for final acceptance.
2. If necessary, re-inspection will be repeated.

1.5 RECORD DOCUMENTS

A. General: Maintain a complete set of Record Documents at the site. Do not use Record Documents for construction purposes. Provide access to Record Documents for Architect and Owner's reference. Generally, without limitation, Record Documents shall include the following:

1. Record Drawings: Maintain a clean set of Contract Drawings and shop drawings, updated weekly to show actual installation. Give particular attention to concealed items.
2. Record Project Manual: Maintain a clean Project Manual, including Addenda, Change Orders, Architect Field Orders, and other modifications, updated weekly to show changes in actual work performed. Give particular attention to substitutions, selection of options, and similar information.
3. Record Product Data: Maintain one copy of each approved Product Data submittal, updated weekly to show changes from products delivered, work performed, and from manufacturer's recommended installation instructions.
4. Record Samples: Maintain one copy of each approved Sample submitted.
5. Record Field Test Reports: Maintain one copy of each Field Test Report.
6. Daily Progress Reports: Maintain one copy of each Daily Progress Report.

B. Maintenance of Documents and Samples: Store documents and samples in Contractor's field office apart from documents used for construction. Provide files and racks for document storage. Provide locked cabinet or secure storage space for storage of samples. File documents and samples in accordance with CSI format. Maintain documents in clean, dry, legible condition and in good order. Do not use Record Documents for construction purposes. Make documents and samples available at all times for inspection by Architect.

C. Recording: Label each document "PROJECT RECORD" in neat large printed letters. Record all information concurrently with the progress of construction. Do not conceal any work until required information is recorded.

D. Drawings: Legibly update all Drawings to record actual construction, including the following:

1. Field changes of dimension and detail.
2. Changes made by Field Order or Change Order.
3. Details not in original Contract Documents.

E. Specifications and Addenda: Legibly mark each Section to record:

1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
2. Changes made by Field Order or by Change Order.

F. Submittal: At Contract Closeout, deliver Record Documents to Architect. Accompany submittal with transmittal letter in duplicate, indicating the date, Project title and number, Contractor's name and address, title and number of Record Document, and signature of Contractor or his authorized representative.

1.6 PROJECT CLOSEOUT MANUAL

A. General: Prepare and submit Project Closeout Manual as specified in this Section and as approved by the Architect for format. Organize data into suitable sets, bound and indexed using the specification's Table of Contents as a guide. Mark appropriate identification on front and spine of each binder. Include the following types of information:

1. Contact Persons' Names
2. Telephone Numbers
3. Pager or Beeper Numbers
4. Cellular Phone Numbers
5. Description of each warranty items covered.
6. Instructions Describing Protocol for Requesting Warranty Service.
7. Emergency Numbers – 911, Fire, Rescue, Police.
8. Utility Company Contacts.

B. Instruct Owner's personnel in use and layout of manual.

C. Format of Data: Prepare data in form of user's guide-type manual for use by Owner's personnel. Format shall be 8-1/2 in. x 11 in., 20-pound minimum, white, typed pages. Text shall be printed or neatly typewritten. Drawings shall be bound with text, with reinforced punched binder tabs. Fold larger drawings to size of text pages. Provide flyleaf for each separate section. Provide typed descriptions of each product and piece of major equipment. Provide indexed tabs to divide sections. Provide reference in each section to other binders for actual Operating and Maintenance Data. Coordinate Project Closeout Manual with Operating and Maintenance Data.

1. Binders: Provide commercial quality three-ring binders with durable and cleanable plastic covers, with maximum ring size of three (3) inches. Only use one (1) binder for this manual.
2. Binder Cover: Identify each volume with typed or printed title "PROJECT CLOSEOUT MANUAL". List title of Project, identity of separate structure as applicable, and identity of general subject matter covered in the manual.

D. Submittal of Project Closeout Manual: Submit two copies of preliminary draft of proposed formats and outlines of contents prior to start of Work.

1. Architect will review draft and return one copy with comments.
2. Submit one copy of complete data in final form 15 days prior to final inspection or acceptance. Copy will be returned after final inspection or acceptance, with comments.
3. Submit three copies of approved data in final form ten days after final inspection or acceptance.

1.7 OPERATING AND MAINTENANCE DATA

A. General: Prepare and submit Operating and Maintenance Data as specified in this Section and referenced in other pertinent Sections of Specifications. Organize Operating and Maintenance Data into suitable sets, bound and indexed. Mark appropriate identification on front and spine of each binder. Include the following types of information:

1. Emergency instructions.
2. Spare parts list.
3. Copies of warranties.
4. Wiring diagrams.
5. Inspection procedures.

B. Instruct Owner's personnel in maintenance of products and in operation of equipment and systems.

C. Preparation of data shall be done by personnel trained and experienced in maintenance and operation of described products.

D. Format of Data: Prepare data in form of instructional manual for use by Owner's personnel. Format shall be 8-1/2 in. x 11 in., 20-pound minimum, white, typed pages. Text shall be manufacturer's printed data, or neatly typewritten. Drawings shall be bound with text, with reinforced punched binder tabs. Fold larger drawings to size of text pages. Provide flyleaf for each separate product or each piece of operating equipment. Provide typed description of product and major component parts of equipment. Provide indexed tabs.

1. Binders: Provide commercial quality three-ring binders with durable and cleanable plastic covers, with maximum ring size of two (2) inches. When multiple binders are used, correlate the data into related consistent groupings.
2. Binder Cover: Identify each volume with typed or printed title "OPERATING AND MAINTENANCE INSTRUCTIONS". List title of Project, identity of separate structure as applicable, and identity of general subject matter covered in the manual.

E. Content of Manual: Neatly typewritten table of contents for each volume, arranged in systematic order, indicating Contractor name and address, and a list of each product, indexed to content of the volume. Provide a separate list with each product, name, address, and telephone number of subcontractor or installer, and local source of supply for parts and replacement.

1. Provide in each volume a copy of each warranty, bond, and service contract issued.

F. Submittal of Maintenance and Operating Manual: Submit two copies of preliminary draft of proposed formats and outlines of contents prior to start of Work.

1. Architect will review draft and return one copy with comments.
2. Submit one copy of complete data in final form 15 days prior to final inspection or acceptance. Copy will be returned after final inspection or acceptance, with comments.
3. Submit three copies of approved data in final form ten days after final inspection or acceptance.

1.8 INSTRUCTION OF OWNER'S PERSONNEL

A. Prior to final inspection or acceptance, fully instruct Owner's designated operating and maintenance personnel in the operation, adjustment and maintenance of products, equipment and systems.

B. Operating and maintenance manual shall constitute the basis of instruction.

1. Review contents of manual with personnel in full detail to explain all aspects of operation and maintenance.

1.9 WARRANTIES AND BONDS

A. General: Assemble warranties, bonds, and service and maintenance contracts, executed by each of the respective manufacturers, suppliers, and subcontractors into the Project Closeout Manual.

B. Refer to Section 017400 – Warranties and Bonds for additional requirements.

1.10 FINAL CLEANING

A. General: General cleaning during construction operations is specified as Work of Section 015000 – Temporary Facilities & Controls.

B. Employ experienced workers or professional cleaners for Final Cleaning. Clean each surface to the condition expected in a normal building cleaning and maintenance program. Comply with manufacturer's instructions and recommendations.

PART 2 - PRODUCTS

2.1 CLEANING MATERIALS

A. General: Provide cleaning materials that will not create hazards to health nor property, and will not damage surfaces or finishes.
B. Use cleaning materials and methods recommended by manufacturer of surface to be cleaned.
C. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. Employ skilled workers for final cleaning.

B. Clean and restore general work areas and adjoining surfaces and other work soiled or damaged during installation; replace work damaged beyond successful restoration. Where performance of subsequent work could result in damage to complete unit or element, provide protective covering and other provisions to minimize potential for damage.

C. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight-exposed interior and exterior surfaces.

D. Special Cleaning for Windows: New glass installed as part of this project shall be thoroughly cleaned inside and out by professional window cleaners at the conclusion of all other work and prior substantial completion. All damaged, broken, or scratched items shall be replaced without costs to Owner, as described under the appropriate Trade Section(s).

E. Complete the following cleaning operations prior to requesting inspection for Certification of Substantial Completion:

1. Concrete and masonry shall be cleaned free of all foreign matter. If, in opinion of the Architect, further cleaning of specific areas is required they shall be scrubbed with water or other cleaning agents. Acid cleaners shall not be used, except as may otherwise specifically be permitted in the trade sections.
2. Metal surfaces, hardware, fixtures, appliances, equipment, and similar items shall be cleaned free of all foreign matter and, if necessary, shall be lightly scrubbed at specific stains with clean water, mild soap, and soft rags, thoroughly rinsed and wiped with clean, soft white rags. Abrasive cleaners shall not be used.
3. Architectural woodwork shall be thoroughly dusted and cleaned of all stains, spots, etc., using methods and cleaning agents, which will not damage the various finishes.

4. Ceramic tile, porcelain, and other surfaces with integral finishes, shall be washed with clean water, mild soap and soft rags, thoroughly rinsed, and then wiped with clean, soft white rags. Abrasive cleaners shall not be used.
5. Resilient flooring shall be given final cleaning and buffing.
6. Carpeting shall be vacuum cleaned and shall have all spots and stains removed.
7. Painted surfaces shall be cleaned free of all foreign matter, and if necessary, shall be lightly scrubbed at specific stains with clean water, mild soap, and soft rags, thoroughly rinsed, and wiped with clean, soft white rags.
8. All advertising matter and temporary instructional material shall be removed from exposed surfaces throughout.
9. Remove labels that are not permanent.
10. Clean interior and exterior finishes to a clean, dust-free condition. Remove stains, films, and similar foreign substances.
11. Vacuum and mop hard floor surfaces.
12. Clean plumbing fixtures to a sanitary condition.
13. Clean site areas of rubbish, litter, and other foreign substances.
14. Sweep paved areas broom clean; rake ground surfaces clean.

F. Before final completion and Owner-occupancy, inspect sight-exposed interior and exterior surfaces and work areas to verify that Work is clean.

END OF SECTION

SECTION 020700 SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. DESCRIPTION

1. Furnish labor, materials, equipment and transportation necessary to do all demolition, as shown on drawings and as specified herein, including but not necessarily limited to the following:

   a. Removal of existing deteriorated concrete as noted on plans or directed by the Engineer.
   b. Removal of existing vertical and overhead concrete where directed by the Engineer.
   c. Removal of existing joints and sealants noted on plans or as directed by the Engineer.
   d. Dust and water control.
   e. Removal and disposal of all debris.
   f. Disconnecting and relocating/reinstalling any existing utility lines on the site, which interfere with the repairs.
   g. Protection of all existing electrical systems, mechanical equipment, light fixtures, overhead piping, fire protection system etc. scheduled to remain.

2. Contractor shall provide barricades with warning lights, enclose the construction area and take all precautions necessary to ensure public and employee safety.
3. All work shall be done in accordance with the requirements of all local and state agencies.

B. QUALITY ASSURANCE

1. Demolition Contractor's Qualifications: Minimum of 5 years experience on comparable projects.
2. Comply with all pertinent codes and regulations which apply to this type of work and with requirements of insurance carriers providing coverage for this work. Dispose of debris in a legal manner off site daily. Do not allow to accumulate on site.

C. JOB CONDITIONS

1. Dust and Water Control: Contractor shall contain particular debris generated by his work activities from polluting the atmosphere or

waterways.

2. On-site burning shall not be permitted.
3. Use all means necessary to protect existing facilities, utilities, and appurtenances within the project areas.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

1. Schedule indicating proposed sequence of operations for selective demolition work to the engineer for review prior to start of work. Include coordination for shutoff, capping, and continuation of utility services as required, together with details for dust and noise control protection.

   a. Provide detailed sequence of demolition and removal work to ensure uninterrupted progress of Owner's on-site operations.
   b. Coordinate with Owner's continuing use of portions of existing surrounding buildings as necessary.

2. Photographs of existing conditions of structure surfaces, equipment, and adjacent improvements that might be misconstrued as damage related to removal operations. File with engineer prior to start of work.

1.4 JOB CONDITIONS

A. Occupancy: Conduct selective demolition work in manner that will minimize need for disruption of Owner's normal operations. Provide minimum of 72 hours advance notice to Owner of demolition activities that will affect Owner's normal operations.

B. Condition of Structures: Owner assumes no responsibility for actual condition of items or structures to be demolished.

1. Conditions existing at time of inspection for bidding purposes will be maintained by Owner insofar as practicable. However, minor variations within structure may occur prior to start of selective demolition work.

C. Partial Demolition and Removal: Items indicated to be removed but of salvageable value to Contractor may be removed from structure as work progresses. Transport salvaged items from site as they are removed.

1. Storage or sale of removed items on site will not be permitted.

D. Protections: Provide temporary barricades and other forms of protection to protect Owner's personnel and general public from injury due to selective demolition work.

1. Provide protective measures as required to provide free and safe passage of Owner's personnel and general public to occupied portions of the project.
2. Provide interior and exterior shoring, bracing, or support to prevent

movement, settlement, or collapse of structure or element to be demolished and adjacent facilities or work to remain.

3. Protect from damage existing finish work that is to remain in place and becomes exposed during demolition operations.
4. Protect floors with suitable coverings when necessary.
5. Construct temporary dust resistant partitions where required to separate areas where noisy or extensive dirt or dust operations are performed. Equip partitions with dust resistant doors and security locks.
6. Provide temporary weather protection during interval between demolition and removal of existing construction on exterior surfaces and installation of new construction to ensure that no water leakage or damage occurs to structure or interior areas of existing building.
7. Remove protections at completion of work.

E. Damages: Promptly repair damages caused to adjacent facilities by demolition work.

F. Traffic: Conduct selective demolition operations and debris removal to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities.

1. Do not close, block, or otherwise obstruct streets, walks, or other occupied or used facilities without written permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

G. Flame Cutting: Do not use cutting torches for removal work.

H. Utility Services: Maintain existing utilities in service and protect them against damage during demolition operations.

1. Do not interrupt utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to governing authorities.
2. Maintain fire protection services during selective demolition operations.

I. Environmental Controls: Use water sprinkling, temporary enclosures, and other methods to limit dust and dirt migration. Comply with governing regulations pertaining to environmental protection.

1. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding, and pollution.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. Use appropriate materials and proper equipment to complete the work of this Section. Provide all necessary barricades, warning devices, enclosures, etc. as

required to comply with governing safety regulations.

B. Schedule of demolition Equipment:

1. 25 lb or smaller chipping hammers

PART 3 - EXECUTION

3.1 PREPARATION

A. General: Provide interior and exterior shoring, bracing, or support to prevent movement, settlement, or collapse of areas to be demolished and adjacent facilities to remain.

1. Cease operations and notify engineer immediately if safety of structure appears to be endangered. Take precautions to support structure until determination is made for continuing operations.
2. Cover and protect equipment, and fixtures from soilage or damage when demolition work is performed in areas where such items have not been removed.

3.2 DEMOLITION

A. General: Perform selective demolition work in a systematic manner. Use such methods as required to complete work indicated on Drawings in accordance with demolition schedule and governing regulations.

1. Demolish concrete in small sections. Cut concrete at junctures with construction to remain using power-driven masonry saw or hand tools; do not use power-driven impact tools.
2. Locate demolition equipment throughout structure and promptly remove debris to avoid imposing excessive loads on supporting walls, floors, or framing.
3. Provide services for effective air and water pollution controls as required by local authorities having jurisdiction.

B. If unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure both nature and extent of the conflict. Submit written report to engineer, accurate in detail. Pending receipt of directive from engineer, rearrange selective demolition schedule as necessary to continue overall job progress without undue delay.

3.3 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove from building site debris, rubbish, and other materials resulting from demolition operations. Transport and legally dispose off site.

1. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws, and ordinances concerning

removal, handling, and protection against exposure or environmental pollution.

2. Burning of removed materials is not permitted on project site.

3.4 CLEANUP AND REPAIR

A. General: Upon completion of demolition work, remove tools, equipment, and demolished materials from site. Remove protections and clean project site per Section 017000.

1. Repair demolition performed in excess of that required. Return elements of construction and surfaces to remain to condition existing prior to start operations.
2. Repair adjacent construction or surfaces soiled or damaged by selective demolition work.

END OF SECTION 020700

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SECTION 032000 CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 DESCRIPTION

A. Furnish, fabricate and install reinforcement and associated items required or indicated on the drawings for cast-in-place concrete, including, but not necessarily limited to, conventional and epoxy-coated bars, welded wire fabric, ties, and supports.

1.3 WORK SPECIFIED ELSEWHERE

A. Furnishing and placement of inserts, anchorages, and other embedded items as specified in other sections.

1.4 QUALITY ASSURANCE

A. Unless otherwise shown or specified, fabrication and placement of all concrete reinforcement and related items shall conform to the following codes and standards:

1. American Concrete Institute, ACI 318, "Building Code Requirement for Reinforced Concrete."
2. American Concrete Institute, ACI 315, "Manual of Standard Practice for Detailing Reinforced Concrete Structures."
3. Concrete Reinforcing Steel Institute, "Manual of Standard Practice."

1.5 SUBMITTALS

A. Shop Drawings: Submit shop drawings for fabrication, bending, and placement of concrete reinforcement. Comply with the ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures." Show bar schedule, stirrup spacing, diagrams of bent bars, arrangements and assemblies, for the fabrication and placement of concrete reinforcement.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery: Deliver reinforcement to the Project Site bundled, tagged, and marked. Use metal tags indicating bar size, lengths, and other information corresponding to markings shown on placement diagrams.

B. Protection: Use all means necessary to protect concrete reinforcement before, during, and after installation and to protect the materials and installed work of all trades. Take all necessary precautions to maintain identification of fabricated bars after bundles are broken.

C. Storage: Store concrete reinforcement materials at the site to prevent damage and accumulation of dirt or excessive rust. Epoxy-coated reinforcing bars shall be stored on protective cribbing.

D. Epoxy-coated reinforcing bars: Coating damage due to handling, shipment and placing need not be repaired where the damaged area is 0.1 square inches or smaller; damaged areas larger than 0.1 square inches shall be repaired with Section 2.01 C; the maximum amount of damage including repaired and unrepaired areas shall not exceed 2 percent of the surface area of each bar.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Reinforcing Bars: ASTM A615, Grade 60, deformed.

B. Welded Wire Fabric: ASTM A82 and ASTM A185. (EPOXY COATED)

C. Epoxy-Coated Reinforcing Bars: ASTM A775. When required, damaged epoxy coating shall be repaired with patching material conforming to ASTM A775 and done in accordance with the material manufacturer's recommendations. Reinforcing bars to be coated shall conform to Section 2.01-A.

D. Bar Supports: Bar supports and spacing of same shall be per recommendations set forth by Chapter 3 of the "CRSI Manual of Standard Practice." Epoxy coated reinforcing bars supported from formwork shall rest on coated wire bar supports, or on bar supports made of dielectric material or other acceptable materials. Wire bar supports shall be coated with dielectric material, compatible with concrete, for a minimum distance of 2 inches from the point of contact with epoxy-coated reinforcing bars. Reinforcing bars used as support bars shall be epoxy-coated.

E. Tie Wire: Wire shall be 16 gauge or heavier, black-annealed. Epoxy-coated reinforcing bars shall be tied with plastic coated, epoxy coated, or nylon-coated tie wire or other acceptable materials.

F. For epoxy grouting reinforcing steel use the Hilti “HIT RE 500 System” supplied by Hilti Fastening Systems, “Dowel Fast” System by Powers Fasteners, or approved equal. Follow manufacturer's directions for installation and required surface preparation.

2.2 FABRICATION

A. General Requirements: Fabricate reinforcing bars to conform to required shapes and dimensions, with fabrication to tolerances complying with CRSI Manual of Standard Practice. In case of fabricating errors, do not rebend or straighten reinforcement in a manner that will injure or weaken the material.

B. Unacceptable Workmanship: Reinforcement with any of the following defects will

not be permitted in the work:

1. Bar lengths, depths and bends exceeding specified fabrication tolerances.
2. Bends or kinks not indicated on drawings or final shop drawings.
3. Bars with reduced cross-section due to excessive rusting or other cause.

C. When epoxy-coated reinforcing bars are cut in the field, the ends of the bars shall be coated with the same material used for repair of coating damage.

PART 3 - EXECUTION

3.1 PLACING REINFORCEMENT

A. General Requirements:

1. All reinforcing bars shall be placed in accordance with CRSI "Recommended Practice for Placing Reinforcing Bars."
2. Bars shall be placed to the tolerance specified in ACI 318-99.
3. Place all reinforcement according to the approved placement drawings. Use sufficient bar supports, tie anchors, additional reinforcing bars, if required, and other accessories to hold all bars securely in place.

B. Concrete Coverage: Place reinforcement to obtain the minimum coverages specified on the drawings for concrete protection. Arrange, space, and securely tie bars and bar supports together with 16 gauge wire to hold reinforcement accurately in position during concrete placement operation. Set wire ties so that twisted ends are directed away from exposed concrete surfaces.

C. Cleaning Reinforcement: Steel reinforcement, at the time concrete is placed around it, shall be free from loose rust and mill scale, oil, grease, paint, earth, ice and all coatings, which would reduce or destroy bond between steel and concrete. Clean reinforcement as necessary prior to, during, or after placement to achieve this result. When bars project from construction joints, all cement mortar clinging to the bars from previous concreting shall be removed before the ensuing enveloping concrete is placed.

3.2 REINFORCING BAR LAP SPLICES

A. New slab reinforcing bars may be spliced to existing bars by lapped splices if adequate lengths of exposed existing bars are available. Provide reinforcement lap splices by placing bars in contact and tying with wire tightly. Comply with the requirements of Engineering Data Report Number 45, ‘Tension Development and Lap Splice Lengths of Reinforcing Bars Under ACI 318-99’ for minimum required length of bar for lap splices. Alternatively, the Contractor can follow the values provided below for lap splice lengths based on the following guidelines:

LAP SPLICE LENGTHS FOR BARS IN TENSION (IN INCHES)

Bar Size	Uncoated Reinforcement	Epoxy-Coated Reinforcement

3	16	17
4	16	22
5	22	33
6	31	46
7	50	74
8	62	93

Note 1. Based on Class B splice = 1.3 ld (ld = tensile development length)
Normal weight concrete
f'c= 4,000 psi min.
Grade 60 reinforcement
Concrete cover = 1.00 in. or greater
Bars have less than 12 in. concrete cast below them.

Note 2. Lap splice lengths for epoxy-coated steel based on concrete cover equal to or greater than 3 bar diameters and clear spacing between bars equal to or greater than 6 bar diameters.

Note 3. For lightweight aggregate concrete, multiply the tabulated values by 1.3.

B. Do not make splices at points of maximum stress if possible.

C. Stagger top splices, and in horizontal wall reinforcement separate at least five feet longitudinally in alternate bars of opposite tiers.

D. Stubs and dowels required to receive and engage subsequent work shall extend a sufficient length to develop the strength of the bar. Place dowel and stub bars in the forms and secure against displacement during the placing of concrete. Where stub steel and dowels extend through construction joints in walls, they shall be thoroughly cleaned of adhering particles of concrete, before continuing the placing of any subsequent concrete.

E. Where splicing length is insufficient either additional concrete removal or mechanical bar splicing shall be implemented at the direction of the Engineer.

3.3 REINFORCING BAR MECHANICAL SPLICES

A. Bars to be spliced by the mechanical splicing process shall be free of paint, oil, rust, scale or other foreign material. The splice shall be done in accordance with the manufacturer's recommendations which shall be submitted to the Engineer for approval.

The mechanical splice shall meet full tension requirement of 100% of the yield strength (fy). The mechanical splices shall be performed using the Quick Wedge system manufactured by Erico Products, Inc. (800)248-2677, MBT Bar Lock System (800) 755-4888, or approved equal.

Test assemblies shall include the same bars, couplers and anchors. The same equipment shall be used to make these assemblies as to be used on the project.

B. Unskilled operators must be trained and indoctrinated by an authorized representative of the system manufacturer. Upon satisfactory completion of the

training, a certificate will be issued by the system manufacturer to show the splicer's name, badge, number/Social Security Number and date certified.

C. Test splices should be made on the size, type and grade of rebar to be used in production. If a change of size, type of grade or rebar occurs, new test results should be obtained.

Minimum rebar deformation heights and spacing within the splice must conform to the requirements of ASTM A625, or ASTM A706 as appropriate. If minimum deformation heights and spacing requirements cannot be satisfied, the system's manufacturer may at its option offer and get an approval for alternate splicing procedure to meet the specified splicing strength requirements.

D. The frequency of test splices shall be as follows:

First Fifty (50) - One Test
Next Fifty (50) - One Test
Thereafter, every one hundred (100) - One Test

The test splice shall be a SISTER SPLICE (removable splice made in-place and in sequence adjacent to production splices by the same operator and under same conditions.)

Separate test frequencies are not necessary to horizontal, vertical and diagonal splices.

E. If any splice used for testing fails to meet the design code strength requirements, two splices in-place shall be cut from the previous lot and tested. If these sister splices fail, the Contractor shall at his own expense, test as many splices as directed by the Engineer and re-splice all test and failed splices.

END OF SECTION 032000

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SECTION 032400 FIBROUS REINFORCEMENT IN CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SCOPE OF WORK

A. All concrete work used in this project shall be fiber reinforced as specified herein.

1.3 STANDARDS

A. Testing:

1. Slump - Perform conventional slump test in accordance with A.S.T.M. C143 prior to adding the fibrous reinforcement.
2. Test Specimens - Fiber-reinforced concrete test specimens prepared for quality control/material acceptance shall be vibrated externally as opposed to internal rodding per the recommendations of ACI 544.

B. Submittals:

1. Sufficient data shall be submitted verifying all fibrous reinforcement physical properties as specified in Section 2.01.C inert polypropylene, twisted fibrillated bundles, length, specific gravity, modulus of elasticity, tensile strength as well as volume used as specified.
2. Acceptable submittals shall be manufacturer's Sweets Engineering Catalogue and/or C.S.I. Spec-Data covering all data as specified.

C. Acceptable Manufacturers:

1. “FORTA CR” as manufactured by the FORTA Corporation.
2. “FIBERMESH” as manufactured by Master Builders Technologies.
3. “Grace Microfiber” as manufactured by Grace Construction Products.

PART 2 - PRODUCTS

2.1 MATERIAL

A. General Description - Synthetic fibrous reinforcement to be used as secondary/temperature reinforcement in the Portland cement concrete.

B. Areas of Use - Fibrous reinforcement to be used in new ready-mixed concrete.

C. Physical Properties

1. Chemical: Fibrous reinforcement shall be chemically and alkali inert, virgin polypropylene.
2. Configuration: Fibrous reinforcement shall be in collated fibrillated (connected screen) form and also in twisted bundle form.
3. Length: The fibrous bundle length shall be a minimum of 0.75".
4. Specific Gravity: 0.91
5. Modulus of Elasticity: 0.70 x 10 to the 6th p.s.i.
6. Tensile Strength: 70,000 p.s.i. minimum

PART 3 - EXECUTION

3.1 INSTALLATION

A. Volume - The fibrous reinforcement shall be used at the rate of 1.5 pounds (minimum) per cubic yard of concrete.

B. Addition and Mixing - The fibrous reinforcement shall be added directly into the concrete either at the batch plant or at the job site. If added at the batch plant with the aggregates, typically no additional site mixing time is required. If a superplasticizer is used, the fibrous reinforcement shall be added first. If the mixing drum contains less than 50% of capacity (i.e. 4 cubic yards in a 10 cubic yard capacity drum), back the concrete up to the top of discharge and empty the fibrous reinforcement directly on top of the concrete before mixing.

C. Placement - Fibrous reinforced concrete shall be moved and placed per standard A.C.I. recommendations. Tined rakes are prohibited as a means of moving the fibrous concrete. If pumping or shooting fibrous concrete, elevate ready mix discharge chute approximately 12" (or higher) above the pump grate or screen to improve the fibrous concrete flow into the pump.

D. Finishing - Standard A.C.I. recommended finishing practices apply for fibrous concrete with the following additional considerations:

1. Hard-Trowel Finish - Avoid Wood trowels and floats which are abrasive to the surface - use steel/magnesium tools.
2. Textured Finish - use stiff-bristled broom (bristles stiffer than the fibers themselves) and brush in only one direction.
3. Cure and joint properly per A.C.I. standard recommendations.

E. It should be noted that fibrous reinforced concrete bleeds less and slightly slower than unreinforced concrete which should be considered during the finishing process.

END OF SECTION 032400

SECTION 033000 CONCRETE WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies cast-in-place concrete, including formwork, mix design, placement procedures and finishes.

1.3 SCOPE OF WORK

A. This work shall consist of partial and full depth removal of concrete slabs at locations indicated on the drawings and placing new, low water/cement ratio, fiber-reinforced, air-entrained structural concrete according to the specifications.

1.4 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data for proprietary materials and items, including forming accessories, admixtures, patching compounds, bonding grout/agent, joint systems, curing compounds, and others as requested by Consultant.

C. The Contractor shall submit trial mix proportion with compressive strength test results to the Consultant for approval.

D. The Testing Agency shall submit test results of cylinders for each day's testing.

E. The Contractor shall submit the proposed pouring sequence and construction joint layout for approval by the Consultant.

F. Minutes of pre-construction conference.

1.5 QUALITY ASSURANCE

A. Codes and Standards: Comply with provisions of following codes, specifications, and standards, except where more stringent requirements are shown or specified:

1. ACI 318-99, "Building Code Requirements for Structural Concrete," or AASHTO specifications.

B. Materials and installed work may require testing and retesting at any time during progress of work. Retesting of rejected materials for installed work, shall be done at Contractor's expense.

C. Pre-Construction Conference: Conduct conference at Project site to comply with requirements of Division 1 Section 013000 - Submittals, and Section 014000 - Quality Control Services.

D. At the onset of the project start or at least 30 days prior to the first concrete pour, the contractor shall conduct a meeting to review the proposed mix designs and to discuss the required methods and procedures necessary to achieve the required concrete quality. The meeting will review requirements for submittals, status of coordinating work, and availability of materials. It will also establish preliminary work progress schedule and procedures for materials inspection, testing, and certifications. Representatives of each entity directly concerned with cast-in-place concrete should attend the meeting, including, but not limited to, the following:

1. Contractor's superintendent.
2. Laboratory responsible for concrete design mixes.
3. Laboratory responsible for field quality control.
4. Ready-mix concrete producer.
5. Concrete subcontractor, if any.
6. Primary admixture manufacturers.
7. Consultant or Owner's representative.

The minutes shall include a statement by the concrete contractor indicating that the proposed mix design and placing techniques will produce the concrete quality required by these specifications.

1.6 APPLICATOR'S QUALIFICATIONS

A. The Contractor shall have a minimum of five years of experience in performing work similar to that shown in the drawings and specifications.

B. The Contractor may be requested to submit a list of five projects in which similar work to that specified was successfully completed. This list shall contain the following for each of the five projects.

1. Project Name
2. Owner of Project
3. Owner's Representative, Address and Telephone Number
4. Brief Description of Work
5. Cost of Portion of Work Similar to that Specified in this Section
6. Total Restoration Cost of Project
7. Date of Completion

PART 2 - PRODUCTS

2.1 FORM MATERIALS

A. Forms for Exposed Finish Concrete: Plywood, lumber, metal, or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.

B. Forms for Unexposed Finish Concrete: N/A

C. Form Coatings: Provide commercial formulation form-coating compounds that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

D. Form Ties: Factory-fabricated, adjustable-length, removable or snap-off metal form ties, designed to prevent form deflection and to prevent spalling concrete upon removal. Provide units that will leave no metal closer than 1-1/2 inches to exposed surface.

1. Provide ties that, when removed, will leave holes not larger than 1-inch diameter in concrete surface.

2.2 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type I, non air-entraining, of recent manufacture and free of lumps.

1. Use one brand of cement throughout project unless otherwise acceptable to Consultant.
2. Pozzolanic materials (fly ash or slag) may be substituted for a portion of the cement when reviewed and approved by the Consultant or Owner's representative. Submittals must indicate testing to prove its suitability in combination with the intended cement and aggregate.
3. Additional, sustained moist curing of the concrete is required when pozzolans are used.

B. Normal Weight Aggregates: ASTM C-33 and as herein specified. Provide aggregates from a single source for exposed concrete. Coarse aggregates shall be clean, sound crushed stone or crushed gravel. Maximum size of coarse aggregate shall be 3/4 inch. No chert shall be permitted.

C. Water: Potable water.

D. Sand: ASTM C-33. Sand shall be clean and sharp.

E. Admixtures, General: Provide admixtures for concrete that are free from chloride ions.

F. Air-Entraining Admixture: ASTM C-260, certified by manufacturer to be compatible with other required admixtures.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:

a. "Air-Mix" or "AEA-92," Euclid Chemical Co.
b. "Darex AEA" or "Daravair," W.R. Grace & Co.
c. "MasterAir VR10 (MB-VR STD)" or "MasterAir AE200 (Micro-

Air)," Master Builders, Inc.
d. "Sealtight AEA," W.R. Meadows, Inc.
e. "Sika AER," Sika Corp.

G. Water-Reducing Admixture: ASTM C 494, Type A.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:

a. "Eucon WR-75," “WAR-91” or “Eucon MR,” Euclid Chemical Co.
b. "WRDA with Hycol," or “Daracem 65,” W.R. Grace & Co.
c. "Master Pozzolith 322 (Pozzolith 322 N)” or “MasterPolyheed 997 (Polyheed 997),” Master Builders, Inc.
d. "Plastocrete 161," Sika Corp.

H. High-Range Water-Reducing Admixture (Super Plasticizer): ASTM C 494, Type F or Type G.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:

a. "Eucon 37," “Eucon 1037,” or “Plastol 5000,” Euclid Chemical Co.
b. "WRDA 19" or "Daracem 100," W.R. Grace & Co.
c. "MasterRheobuild 1000 (Rheobuild 1000)," Master Builders, Inc.
d. "Sikament 300," Sika Corp.

I. Water-Reducing, Retarding Admixture: ASTM C 494, Type D.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:

a. "Eucon Retarder 75," Euclid Chemical Co.
b. "Daratard-17," W.R. Grace & Co.
c. "MasterSet R100 (Pozzolith 100XR)," Master Builders, Inc.
d. "Plastiment," Sika Corporation.

J. Certification: Written conformance to the above-mentioned requirements and the chloride ion content of admixtures will be required from the admixture manufacturer prior to mix design review by the Engineer.

K. Fibrous Reinforcement:

1. Subject to compliance with requirements, provide fibrous reinforcement as per specification Section 032400.

2.3 RELATED MATERIALS

A. Reglets: Where resilient or elastomeric sheet flashing or bituminous membranes are terminated in reglets, fill reglet or cover face opening to prevent intrusion of concrete or debris.

B. Moisture-Retaining Cover: Burlap and plastic complying with ASTM C 171.

C. Moist Curing: Curing shall be accomplished by wet curing only. A curing membrane shall only be used in floor areas if approved in writing by the Consultant or Owner's representative.

2.4 PROPORTIONING AND DESIGN OF MIXES

A. Prepare design mixes for concrete by laboratory trial batch or field experience methods as specified in ACI 301, Section 4.2.3. Use an independent testing facility acceptable to the Consultant for preparing and reporting proposed mix designs. The testing facility shall not be the same as used for field quality control testing.

B. Submit written reports to the Consultant of each proposed mix at least 15 days prior to start of work. Do not begin concrete production until proposed mix designs have been reviewed and approved by the Consultant. All mix designs shall be submitted on a Mix Design Submittal Form.

C. Design mix to provide structural concrete with the following properties;

1. 5,000-psi, 28-day compressive strength, structural normal weight 145 pcf; W/C ratio, 0.38 maximum; fiber reinforcement as per Section 032400.

2.5 ADMIXTURES

A. Use high-range water-reducing admixture (Superplasticizer) in concrete for placement and workability.

B. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content of 6.0% with a tolerance of plus or minus 1.0 percent.

C. Use admixtures for water reduction and set control in strict compliance with manufacturer's directions.

1. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:

a. 3 inches plus or minus ½ inch, prior to addition of superplasticizing admixture.

b. Not more than 8 inches final slump after addition of superplasticizing admixture.

2.6 CONCRETE MIXING

A. Provide batch ticket for each batch discharged and used in work, indicating project identification name and number, date, mix type, mix time, quantity, and amount of water introduced.

B. Ready-Mix Concrete: Comply with requirements of ASTM C 94, and as specified.

1. When air temperature is between 85 deg F (30 deg C) and 90 deg F (32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 PREPARATION

A. Remove concrete members as indicated on the drawing. The removal of concrete shall be performed using approved methods and prepare the concrete surfaces to receive new concrete as shown on plans and as directed by the engineer in the field.

3.2 FORMS

A. General:

1. The Contractor shall submit detailed drawings for form work for examination by the Consultant. If such drawings are not satisfactory to the Consultant, the Contractor shall make such changes in them as may be required, but it is understood that the Consultant's examination of the drawings as submitted or corrected shall in no way relieve the Contractor of responsibility for obtaining satisfactory results.
2. All forms shall be so constructed and maintained that the finished concrete will be true to line and grade and of the shape and dimensions shown on the Plans. The forms shall be constructed so that they can be removed without injury to the concrete.
3. Forms shall be mortar-tight, sufficiently rigid to prevent distortion due to the wet concrete mix and other loads incident to construction operations, including vibration, and so constructed and maintained to prevent warping and opening of the joints due to shrinkage of the form material. Molding strips shall be placed in the corners of forms so as to produce beveled edges on permanently exposed concrete corners.
4. The interior of forms shall be treated with a non-staining form oil before concrete is placed to prevent adhesion of the concrete to the form.
5. All lumber in contact with concrete shall be free from knot holes, loose knots, cracks, splits, warps or any other defects which would mark the appearance of the finished structure. Any lumber which had defects affecting its strength shall not be used.

6. In designing forms, concrete shall be considered as a liquid weighing 150 pounds per cubic foot for vertical loads and for computing the hydrostatic head for horizontal pressure. In addition, a live load allowance of 50 pounds per square foot shall be used on horizontal projections of surfaces. Forms shall be designed so that no member will develop a dead load deflection of more than 1/270th of the span.
7. Spreader blocks and non "stay-in-place" bracing shall be removed from forms before concrete is placed. In no case, shall any portion of wood be left in the concrete.

B. Forms for Permanently Exposed Surfaces:

1. Forms for concrete surfaces that will be permanently exposed to view shall be constructed of plywood or of metal panels. Wood or metal linings for forms shall be of such kind and quality, or shall be so treated or coated, that there will be no chemical deterioration or discoloration of the formed concrete surface. The type and condition of form linings, and the construction of the forms, shall be such that form surfaces will be even and uniform.
2. Plywood sheets less than five-eighth inch in thickness shall be placed against a solid wood backing of three-quarter inch sheathing. Plywood sheets five-eighth inch or more in thickness may be used without backing, provided the forms are constructed to withstand pressure developed during placing of concrete without producing visible waviness between studs. Plywood sheets shall be placed so that joints are tight and with the long dimension horizontal.
3. Metal for forms shall be of such thickness that the forms will remain true to shape. Clamps, pins, or other connecting devices shall be such that they will hold the forms rigidly together in place and allow removal without injury to the concrete. Metal forms which do not present a smooth surface or line up properly shall not be used. All metal forms shall be kept free from rust, grease, or other foreign material which would discolor the concrete.
4. Form panels, either of wood or metal, shall be constructed and assembled so as to result in tight joints between the panels.

C. Form Anchorage:

1. Forms shall be securely tied together with approved rods, and braced in a substantial and unyielding manner. In general, tie rods shall be designed to also act as struts or spreader. Wood struts will not be permitted to remain in the concrete.
2. For concrete surfaces that will be permanently exposed to view, metal ties or anchorages within the forms shall be constructed so as to permit their removal to a depth of at least one and one-half inches from the face without injury to the concrete. The cavities on both sides of the concrete resulting from the removal of the end of form ties shall be filled with dry-pack Portland cement mortar having the same proportions of cement and sand as the mortar in the body of the concrete. The surface of the filling shall be left sound, smooth and even and shall match, insofar as practicable, the color of the surrounding concrete.

3. Devices which, when removed, will leave an opening entirely through the concrete will not be permitted. Wire ties shall not be used. Any parts of metal supports or spacers for reinforcement that are left in place within one and one-half inches of an exposed surface of the concrete shall be of non-rusting metal or have a non-rusting coating. If such parts are galvanized, the weight of zinc coating shall average not less than two ounces per square foot of actual surface.

D. Inspection of Forms:

1. All dimensions of forms in place shall be carefully checked before concrete is placed. Immediately prior to placing concrete, any warpings or bulging shall be corrected and all dirt, sawdust, shavings or other debris removed. In narrow walls where the bottom of the forms are otherwise inaccessible, the lower boards or panels shall be left loose on the back side so that extraneous material can be removed just prior to placing concrete.
2. If during placing of the concrete, the forms show signs of bulging or sagging, they shall be properly realigned and securely braced, and, if necessary to make proper correction, the portion of the concrete affected shall be removed.
3. When forms are unsatisfactory in any way, either before or during the placing of concrete, the placing shall be suspended until the defects are corrected.
4. If the forms develop any defects, such as bulging, sagging, leakage or irregular surfaces after the concrete has been poured, that portion of the work shall be removed, reconstructed or repaired as directed by the Consultant without additional compensation to the Contractor.

3.3 PLACING FINISHING AND CURING

A. Bonding Grout:

a. After the existing concrete surface has been cleaned, it shall be uniformly saturated by pre-wetting for 2 hours minimum. Surface must be wet to saturated surface dry (SSD) condition, and any freestanding water shall be completely removed prior to placing the bonding grout. Immediately before placing concrete, a thin coating of bonding grout shall be scrubbed into the properly prepared surface of the existing concrete. Proper workmanship shall be exercised to insure that all existing surfaces receive a thorough, even coating and that no excess grout is permitted to collect in pockets. The rate of progress in applying grout shall be limited so that the grout does not become dry before it is covered with new concrete.
b. Bonding grout for patching concrete to existing concrete shall consist of equal parts by weight of Portland Cement and sand mixed in a portable mechanical mixer with sufficient water to form a stiff slurry. The consistency of this slurry shall be such that it can be applied with a stiff brush or broom to the old concrete in a thin, even coating that will not run or puddle in low spots.
c. Should the bonding grout dry before the concrete is placed, the Contractor will remove the dried grout and sandblast clean the grouted surface, at his expense, before placing fresh bonding grout.

d. When the method of concrete removal includes hydromilling or hydrodemolition, the requirements for the use of bonding grout may be waived. Prepared surfaces shall be clean and free of laitance, foreign material and any debris encountered during surface preparation. Do not allow cement to dry and re-adhere on the surfaces. The surface shall be uniformly saturated by wetting for 4 hours (min.) Surface will be saturated surface dry (SSD) condition, and any free standing water shall be completely removed prior to concrete placement. No free moisture or puddles on the surface will be permitted or accepted.

B. Placing and finishing: After the bonding grout has been applied, concrete shall be placed, consolidated by vibration, and shall be finished by screening and bull floating to bring the finished surface to specified elevation. The surface shall then receive a light broom finish, as directed by the Engineer. The reinforcing steel shall have a minimum concrete cover as shown on plans. The finished concrete shall be suitably protected, until the completion of the required curing period. Provide tooled joints between new and existing concrete surfaces.

C. Curing: The recommendations of ACI 308 Standard Practice for Curing Concrete, shall be followed. When water is required to wet the surface of the newly placed concrete, it shall be applied as a fine spray so that it will not mark or pond on the surface. Except where otherwise specified, the curing period shall be at least 72 hours. If high early strength concrete is approved by the Consultant, the curing period may be reduced as directed by the Consultant. If fly ash or slag is approved in the mix by the Consultant, the curing time will be extended. Curing shall be accomplished by wet curing only. The curing and sealing compound shall only be used on floor and slab areas approved by the Consultant.

a. The surface of the newly poured concrete shall be covered with wetted burlap as soon as the concrete has hardened sufficiently to prevent marring of the surface. The burlap shall overlap six inches. At least two layers of wetted burlap shall be placed on the finished surface. The burlap shall be kept saturated by means of a mechanically operated sprinkling system. In place of the sprinkling system, two layers of burlap may be substituted for one layer of burlap and impermeable covering.
The burlap sheets shall be placed so that they are in contact with the vertical faces of concrete slabs after removal of slab forms, and that portion of the material in contact with those faces shall be kept saturated with water.

b. Membrane Curing Method. Membrane curing will not be permitted unless approved in writing by the Consultant. Concrete at these locations shall be cured by another method as specified above.
After the concrete has been finished, the surface shall be cured with the specified curing compound. The seal shall be maintained for the specified curing period. The vertical faces of concrete slabs shall, likewise, be sealed immediately after the forms are removed. This high solids curing and sealing compound shall be applied at a maximum coverage rate of 250 square feet per gallon. These applications shall be made with mechanical equipment.
At locations where the coating is discontinuous or where pin holes show or where the coating is damaged due to any cause and on areas adjacent to sawed joints, immediately after sawing is completed, an additional coating

of membrane curing compound shall be applied at the rate of one gallon per 250 square feet.

c. The Consultant may order curing by another method specified herein if unsatisfactory results are obtained with a curing compound. Prior to starting The Work, the Contractor shall have available, at the site of The Work, supply of one of the other approved curing materials sufficient for curing one day's production.

d. The Contractor's construction operations including the management of traffic, shall be such as to avoid damage to the coatings of curing compound for period of not less than the curing period specified. Any curing compound that is damaged or that peels from the concrete surface within the curing period specified, shall be repaired by the Contractor without delay and in an approved manner. No additional compensation will be allowed to the Contractor for performance of this work.

3.4 REMOVAL OF FORMS

A. General: Formwork may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 72 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form-removal operations, and provided curing and protection operations are maintained.

3.5 REUSE OF FORMS

A. Clean and repair surfaces of forms to be reused in work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-coating compound as specified for new formwork.

B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use "patched" forms for exposed concrete surfaces except as acceptable to Consultant.

3.6 CONCRETE SURFACE REPAIRS

A. Patching Defective Areas: Repair and patch defective areas with bonding grout or proprietary repair products immediately after removal of forms, when acceptable to Consultant.

1. Cut out honeycomb, rock pockets, voids over 1/4 inch in any dimension, and holes left by tie rods and bolts, down to solid concrete but in no case to a depth of less than 1 inch. Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with specified bonding agent. Place patching mortar before bonding grout has dried.
2. For exposed-to-view surfaces, blend white portland cement and standard portland cement so that, when dry, patching mortar will match surface texture of surrounding concrete. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.

B. Repair of Concrete Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Consultant. Surface defects, as such, include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins and other projections on surface, and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes, fill with dry-pack mortar, or precast cement cone plugs secured in place with bonding agent.

1. Repair concealed formed surfaces, where possible, that contain defects that affect the durability of concrete. If defects cannot be repaired, remove and replace concrete.

3.7 QUALITY CONTROL TESTING DURING CONSTRUCTION

A. General: The Owner will employ a testing laboratory to perform tests and to submit test reports.

B. Sampling and testing for quality control during placement of concrete may include the following, as directed by Consultant.

C. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.

1. Slump: ASTM C 143; one test at point of discharge for each truck delivering the concrete; additional tests when concrete consistency seems to have changed.
2. Air Content: ASTM C 173, volumetric method for lightweight or normal weight concrete; ASTM C 231 pressure method for normal weight concrete; one for each truck of air-entrained concrete.
3. Concrete Temperature: Test hourly when air temperature is 40 deg F (4 deg C) and below, when 80 deg F (27 deg C) and above, and each time a set of compression test specimens is made.
4. Compression Test Specimen: ASTM C 31; one set of 6 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory-cured test specimens except when field-cure test specimens are required.
5. Compressive Strength Tests: ASTM C 39; one set for each day's pour exceeding 5 cu. yds. plus additional sets for each 50 cu. yds. more than the first 25 cu. yds. of each concrete class placed in any one day; one specimen tested at 3 days, two specimen tested at 7 days, 2 specimens tested at 28 days, and one specimen retained in reserve for later testing if required.
6. When frequency of testing will provide fewer than 5 strength tests for a given class of concrete, conduct testing from at least 5 randomly selected batches or from each batch if fewer than 5 are used.
7. When total quantity of a given class of concrete is less than 50 cu. yds., Consultant may waive strength test if adequate evidence of satisfactory strength is provided.
8. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.

9. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength, and no individual strength test result falls below specified compressive strength by more than 500 psi.

D. Test results will be reported in writing to the Consultant, Ready-Mix Producer, and Contractor within 24 hours after tests. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for 7-day tests and 28-day tests.

E. Nondestructive 3-day Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.

F. Additional Tests: The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Consultant. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed. Contractor shall pay for such tests when unacceptable concrete is verified.

END OF SECTION 033000

SECTION 033200 CONCRETE REPAIR USING HIGH STRENGTH, FAST-SETTING MATERIALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections apply to the work of this section

1.2 SCOPE OF WORK

A. This work shall consist of the removal of existing delaminated concrete and the installation of a fast-setting, high-strength concrete at locations to be re-opened to traffic the following morning or designated by the Engineer. Materials in this specification may also be appropriate when the scope of concrete work is limited and it is not practical to use ready-mixed concrete.

PART 2 - PRODUCTS

2.1 MATERIALS

A. The fast-setting concrete repairs must achieve a compressive strength of 3,500 psi or safely accept vehicular traffic within 3 hours of placement.

B. The concrete shall resist freeze/thaw damage and scaling in compliance with ASTM Test Procedures C-666 and C-672. The products approved under this section shall be:

1. SikaEmaco 1060 / 1060EX / 1061 / 430 by Sika USA
2. HP Concrete by US Concrete Products
3. Conproco Express Set

Note: Products related to those above with extended working times may be acceptable at the discretion of the Engineer.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

A. The exact location of spalled concrete to be repaired will be determined in the field by tapping of slab with a sounding rod, chain drag or hammer. An outline of the area to be repaired will be marked with chalk.

B. The areas of the spalled concrete to be removed will be outlined by making a sawcut around the perimeter of the spalled area. The nominal depth of sawcut shall be 1/2

inch. Do not, under any circumstances, cut existing reinforcing bars or post-tensioning strands.

C. All loose unsound concrete shall be removed with pneumatic or electric jack hammer weighing no more than 15 lbs. may be used for removing concrete around mild steel reinforcement. Where unsound concrete is below reinforcement, removal to 3/4 inch below reinforcement is required.

D. All deteriorated reinforcing steel bars which have lost more than 20% (or more) of their cross-sectional areas or selected by the Engineer shall be replaced. New reinforcing steel bars shall be furnished and placed in accordance with Section 032000 of the technical specifications and under the directions of the Engineer.

E. The deck surface shall be blown clean with compressed air to assure that all loose or hollow concrete is removed. The reinforcing steel shall be sand blasted to remove all rust.

3.2 PLACING, FINISHING AND CURING

A. Place and properly mixed concrete into the prepared area from one side to the other. Do not place concrete in lifts. Work the material firmly into the bottom and sides of the patch to assure good bond. Do not re-temper or finish material after initial set.

B. For maximum performance and minimal shrinkage, wet curing shall be performed for a minimum of 3 hours followed by the application of an approved curing compound.

3.3 METHOD OF MEASUREMENT

A. This work will be measured for payment in square feet. The quantity of repair area will be computed from areas marked by the Contractor and approved by the Engineer.

END OF SECTION 033200

SECTION 033400 CONCRETE REPAIR USING TROWEL APPLIED MORTAR

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SCOPE OF WORK

A. This work shall consist of the removal of existing unsound concrete to required depth and the installation of a trowel applied, fast-setting cement mortar at locations indicated on drawings and/or at other locations designated by the Engineer.

PART 2 - PRODUCTS

2.1 MATERIALS

A. The fast-setting polymer repair mortar shall achieve a compressive strength of 5,000 psi in 28 days. The products approved under this section are as follows.

1. Sika Emaco 425 / Sika Repair SHB by Sika USA
2. V/O by US Concrete Products
3. Conpro Set by Conproco

PART 3 - EXECUTION

3.1 SURFACE PREPARATIONS

A. All loose and unsound concrete shall be removed with small chipping hammers. Remove concrete a minimum of 3/4" beyond the reinforcing steel.

B. The surface shall be blown clean with compressed air to assure that all loose and hollow concrete is removed. The reinforcing steel shall be sandblasted to remove all rust.

3.2 PLACING, FINISHING AND CURING (Trowel Applied Mortar):

A. Apply patching material as follows and in accordance with manufacturer’s recommendations.

B. Saturate the surface dry with water so that it maintains a dark gray color one half hour before placing.

C. Scratch a base coat firmly into the dampened surface and apply the balance of the patch. Consolidate the mortar for density. For deep patches, add recommended

filler and apply the material in lifts, allowing it to stiffen enough between lifts to support its own weight. For repairs over 4 inches deep, steel ties shall be provided to aid in weight support. Maximum filler addition to be 1 part filler to 2 parts by volume. The surface shall be troweled and brushed to match surrounding concrete.

D. The finished patch shall be cured for at least forty eight hours. Keep damp with water or coat with a water-based curing and sealing compound conforming to ASTM C1315 as recommended by the polymer repair mortar manufacturer.

E. In hot weather, the surface shall be kept cool by shading. Use cold liquid for mixing. Work material rapidly since heat accelerates set. Cure immediately. In cold weather, do not make repair if temperature is expected to fall below freezing within 48 hours of placing. The patches must be kept at a minimum of 60 degrees F. for seventy two hours for proper curing.

3.3 TESTING

A. The patched areas shall be sounded with a chain drag and/or hammer after 7 days after concrete placement; any hollowness detected shall be corrected by the Contractor by removing and replacing the patch at no extra cost to the Owner.

END OF SECTION 033400

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including General and Supplementary Conditions and all Divisions of the Specifications apply to this Section.

1.2 SCOPE OF WORK

A. This work shall consist of the removal of existing unsound concrete to required depth and the installation of a prepackaged pump and pour repair mortar at locations indicated on drawings and/or at other locations designated by the Engineer.

PART 2 - PRODUCTS

2.1 MATERIALS

A. The pump and pour repair mortar shall achieve a minimum compressive strength of 5,000 psi in 28 days. The products approved under this section are as follows.

1. SikaEmaco 440 / S 466 by Sika USA
2. Deck Mix SCC / FP by US Concrete Products
3. Forment by Conproco

PART 3 - EXECUTION

3.1 SURFACE PREPARATIONS

A. Saw cut the perimeter of the repair area to a nominal depth of 1/2”. Take precautions in areas likely to contain top reinforcing not to cut any reinforcing steel or post-tensioning strands.

B. All loose and unsound concrete shall be removed with small chipping hammers to provide a minimum ¼” substrate profile. Remove concrete a minimum of 3/4" beyond the reinforcing steel.

C. The surface shall be blown clean with compressed air to assure that all loose and hollow concrete is removed. The reinforcing steel shall be sandblasted to remove all rust. All measures must be taken to prevent flash rusting from occurring to the reinforcing steel.

D. Forms shall be watertight. Apply a suitable form release to the forms.

3.2 PLACING, FINISHING, AND CURING

A. Apply patching material as follows and in accordance with manufacturer's recommendations.

B. Mix the repair mortar according to manufacturer's recommendations. Follow the manufacturer's guidelines for extending the repair mortar by adding aggregate as required.

C. Saturate the surface dry with water so that it maintains a dark gray color one half hour before placing.

D. Vibrate form while pumping repair mortar using a variable pressure pump. Do not over pump so that the forms deflect.

E. Cure the repaired area as recommended by the repair mortar manufacturer.

3.3 TESTING

A. The patched areas shall be sounded with a hammer after 7 days after concrete placement; any hollowness detected shall be corrected by the Contractor by removing and replacing the patch at no extra cost to the Owner. The contractor shall provide access, at their expense, for the Engineer to sound all repaired areas.

END OF SECTION 033450

SECTION 040001

MASONRY WORK

(Filed Sub-Bid Required)

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Time, Manner and Requirements for Submitting Sub-Bids:

1. Sub-bids for work under this Section shall be for the complete work and shall be submitted through DCAMM's E-Bid Room as stipulated in the DCAMM Instructions to Bidders.

2. Sub-bids filed with the Division of Capital Asset Management and Maintenance shall be accompanied by BID BOND or CASH or CERTIFIED CHECK or TREASURER'S CHECK or CASHIER'S CHECK issued by a responsible bank or trust company payable to the Commonwealth of Massachusetts in the amount of five percent of the sub-bid. A sub-bid accompanied by any other form of bid deposit than those specified will be rejected.

C. Sub Sub-Bid Requirements: (None required under this Section.)

D. Reference Drawings: The Work of this Trade Bid is shown on the following Contract Drawings:

NUMBER	SHEET NAME
R-1	GRADE LEVEL FLOOR PLAN
R-2	FIRST LEVEL FRAMING PLAN
R-3	SECOND LEVEL FRAMING PLAN
R-4	THIRD LEVEL FRAMING PLAN
R-5	FOURTH LEVEL FRAMING PLAN
R-6	FIFTH LEVEL FRAMING PLAN
R-7	ELEVATION DRAWINGS
R-8	TYPICAL DETAILS – SHEET 1
R-9	TYPICAL DETAILS – SHEET 2
R-10	TYPICAL DETAILS – SHEET 3

DESCRIPTION OF WORK

E. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. All Work of Section 045000 - MASONRY RESTORATION AND CLEANING.
2. All Work of Section 042000 - UNIT MASONRY.

F. Alternates: Not Applicable.

END OF SECTION

STANDARD SPECIFICATIONS

DCAMM Standard Specifications are intended for use only on projects of the Division of Capital Asset Management and Maintenance in the Commonwealth of Massachusetts. Each section will require editing by a registered architect or engineer before issue. Refer to the User's Guide for additional requirements.

NOTES TO THE DESIGNER

Guarantees and Warranties – When specifying guarantees and/or warranties for work, products, materials and/or equipment, the Designer must account for DCAMM's requirement that guarantees and warranties start at the date of Certificate of Agency Use and Occupancy. Guarantees or warranties that start at the date of shipment from the factory, or from the completion date of an individual portion of the project, are not acceptable.

Filed Sub-Bids MGL Chapter 149: For sections listed in the table of contents with an asterisk (*), the threshold amount for requiring a filed sub-bid is $ 25,000. If the cost estimate for the scope of the work of that filed sub-bid is below $ 25,000, then delete the requirement for the filed sub-bid for that section.

END

SECTION 042000 UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Provide unit masonry as indicated on drawings or as directed by the engineer, including:

1. Brick walls.

1.2 SYSTEM PERFORMANCE REQUIREMENTS

A. Provide unit masonry that develops the following installed compressive strengths (f'm):

1. For clay unit masonry: f'm = 1,500 psi.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's product data for each type of masonry unit, accessory, and other manufactured products, including certifications that each type complies with specified requirement.

B. Shop Drawings for Reinforcing: Detail fabrication, bending, and placement of unit masonry reinforcing bars. Comply with ACI 315 "Details and Detailing of Concrete Reinforcing" showing bar schedules, stirrup spacing, diagrams of bent bars, and arrangement of masonry reinforcement.

C. Samples for Verification Purposes:

1. Unit Masonry Samples: For each type of exposed masonry unit.
2. Colored Mortar Samples: For each color required showing the full range of color which can be expected in the finished work. Label samples to indicate type and amount of colorant used.

D. Material certificates for the following signed by manufacturer and Contractor certifying that each material complies with requirements.

1. Each different cement product required for mortar and grout including name of manufacturer, brand, type, and weight slips at time of delivery.
2. Each material and grade indicated for reinforcing bars.
3. Each type and size of joint reinforcement.
4. Each type and size of anchors, ties, and metal accessories.
5. Material test reports from a qualified independent testing laboratory employed and paid by Contractor indicating and interpreting test results relative to compliance of the following proposed masonry materials with requirements indicated.
6. Mortar complying with property requirements of ASTM C 270.

7. Grout mixes. Include description of type and proportions of grout ingredients.
8. Hot-weather construction procedures evidencing compliance with requirements specified in referenced unit masonry standard.

E. Masonry units.

1. Cold-weather construction procedures evidencing compliance with requirements specified in referenced unit masonry standard.
2. Hot-weather construction procedures evidencing compliance with requirements specified in referenced unit masonry standard.

1.4 QUALITY ASSURANCE

A. Unit Masonry Standard: Comply with ACI 530.1/ASCE 6 "Specifications for Masonry Structures," except as otherwise indicated.

B. Brick Masonry Tests: For each different clay masonry unit indicated, units will be tested per ASTM C-67.

C. Single Source Responsibility for Masonry Units: Obtain exposed masonry units of uniform texture and color, or a uniform blend within ranges accepted for these characteristics, from one manufacturer for each different product required for each continuous surface or visually related surfaces.

D. Single Source Responsibility for Mortar Materials: Obtain mortar ingredients of uniform quality, including color for exposed masonry, from one manufacturer for each cementitious component and from one source and producer for each aggregate.

E. Preinstallation Conference: Conduct conference at Project site to review requirements for successful installation of unit masonry.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver masonry materials to project in undamaged condition.

B. Store and handle masonry units to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion or other causes.

C. Store limestone using non-absorptive spacers which allow air to circulate to eliminate pad marks.

D. Store cementitious materials off the ground, under cover and in dry location.

E. Store aggregates where grading and other required characteristics can be maintained.

F. Store masonry accessories including metal items to prevent deterioration by corrosion and accumulation of dirt.

1.6 PROJECT CONDITIONS

A. Protection of Work: During erection, cover top of walls with heavy waterproof sheeting at end of each day's work. Cover partially completed structures when work is not in progress.

B. Extend cover a minimum of 24 inches down both sides and hold cover securely in place.

C. Where one wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches down face next to unconstructed wythe and hold cover in place.

D. Loading:

1. Uniform Loads: Do not apply floor or roof loading for at least 12 hours after building masonry.
2. Concentrated Loads: Do not apply for at least 3 days after building masonry.
3. Staining: Prevent grout or mortar or soil from staining the face of masonry to be left exposed or painted. Remove immediately grout or mortar in contact with such masonry.
4. Protect base of walls from rain-splashed mud and mortar splatter by means of coverings spread on ground and over wall surface.
5. Protect sills, ledges and projections from droppings of mortar.
6. Protect surfaces of structural steel frame, as well as similar products with painted and integral finishes from mortar droppings.
7. Cold-Weather Construction: Comply with referenced unit masonry standard for cold-weather construction and the following:
8. Hot-Weather Construction: Comply with referenced unit masonry standard.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Comply with referenced unit masonry standard and other requirements specified in this Section applicable to each material indicated.

2.2 BRICK

A. Brick Standard: Facing brick, ASTM C-216:

1. Grade: SW.
2. Type: FBS (normal size and color variations).
3. Compressive Strength: Not less than the unit compressive strengths required to produce clay masonry construction of compressive strength indicated.

B. Size: Provide bricks manufactured to the following actual dimensions:

1. Standard Modular: 2-1/4” x 3-5/8” x 7-5/8”.
2. Special Shapes: Provide where indicated and for application requiring brick of form, size and finish on exposed surfaces which cannot be produced from standard brick sizes by sawing.

C. Texture and Color: Match existing.

D. Products: Subject to compliance with requirements, provide products indicated on Drawings.

2.3 MORTAR AND GROUT

A. Mortar and Grout Materials:

1. Portland Cement: ASTM C-150, Type I or II, except Type III may be used for cold weather construction. Provide natural color or white cement as required to produce required mortar color.
2. Hydrated Lime: ASTM C-207, Type S.
3. Aggregates for Mortar: ASTM C-144.
4. Aggregate for Grout: ASTM C-404.
5. Water: Clean, and potable.
6. Admixtures: Do not add admixtures including coloring pigments, air-entraining agents, accelerators, retarders, water repellent agents, anti-freeze compounds or other admixtures, unless otherwise indicated.

   a. Do not use calcium chloride in mortar or grout.

B. Mixing: Combine and thoroughly mix cementitious materials, water and aggregates in a mechanical batch mixer; comply with referenced ASTM standards for mixing time and water content.

C. Mortar for Unit Masonry: Comply with ASTM C-270, Proportion Specifications, of types of mortar required, unless otherwise indicated.

1. Cementitious Material: Portland cement-lime.

2. Type for Masonry: Type N, 1:1:6 mix.
3. Reinforced Concrete Unit Masonry: Type S.

D. Colored Aggregate Mortar: Produce mortar of color required by use of colored aggregates in combination with selected cementitious materials.

1. Mix to match existing.

E. Grout for Unit Masonry: Comply with ASTM C-476 for grout for use in construction of reinforced and nonreinforced unit masonry. Use grout of consistency (fine or coarse) at time of placement which will completely fill all spaces intended to receive grout.

1. Use fine grout in grout spaces less than 2" in horizontal direction, unless otherwise indicated.
2. Use coarse grout in grout spaces 2" or more in least horizontal dimension, unless otherwise indicated.

2.4 JOINT REINFORCEMENT, TIES, DOWELS, AND ANCHORING DEVICES

A. Materials: Comply with requirements below for basic materials and with requirements indicated under each form of joint reinforcement, tie and anchor for size and other characteristics.

1. Hot-Dip Galvanized Wire: ASTM A-82 for wire and ASTM A-153, Class B-2 (1.5 oz. per sq. ft. of wire surface) for coating; apply after prefabrication into units.

   a. Application: Use except where another finish is specified.

2. Hot-Dip Galvanized Steel Sheet: ASTM A-366, Class 2 or ASTM A-635; Hot-dip galvanized after fabrication, comply with ASTM A-153, Class B.
3. Stainless Steel: AISI Type 304 (UNS S30400) alloy.

B. Joint Reinforcement: Provide welded wire units prefabricated with deformed continuous side rods and plain cross rods into straight lengths of not less than 10', with prefabricated corner and tee units, and complying with following requirements:

1. Width: Fabricate joint reinforcement in units with widths of approximately 2" less than nominal width of walls and partitions as required to position side rods for full embedment in mortar with mortar coverage of not less than 5/8" on joint faces exposed to exterior and 1/2" elsewhere.
2. Wire Size: 0.1483" diameter (9 gage)
3. Single-Wythe Masonry: Provide truss design with single pair of side rods and with continuous diagonal cross rods spaced not more than 16" o.c.

4. Multi-Wythe Masonry: Adjustable tab design with single pair of side rods and ladder type cross ties spaced not more than 16” o.c; with side rods spaced for embedment within each face shell of back-up wythe. Adjustable ties extend to within 1” of exterior face of facing wythe and spaced 16” o.c. Units shall be designed to allow exterior wythe to move vertically and horizontally and prevents movement from positive and negative wind load. Use units with adjustable rectangular ties, and with insulation clip washers.

   a. Acceptable Products: Subject to compliance with requirements, provide Adjusto-flex-Mesh/Horizontal Loop by Hohmann & Barnard, Inc., or equal by another of the manufacturers named below.

C. Flexible Anchors: Where flexible anchors are indicated for connecting masonry to structural framework, provide 2-piece anchors as described below which permit vertical or horizontal differential movement between wall and framework parallel to, but resist tension and compression forces perpendicular to, plane of wall.

1. Anchorage to Steel Framework: Provide manufacturer's standard anchors with crimped 1/4" diameter wire anchor section for welding to steel and triangular-shaped wire tie section sized to extend within 1" of masonry face.
2. Wire Size: 0.1875" diameter.
3. Wire Size 0.25" diameter.

D. Anchor Bolts: Provide steel bolts with hex nuts and flat washers complying with ASTM A-307, Grade A, hot-dip galvanized to comply with ASTM C-153, Class C, in sizes and configurations indicated.

E. Manufacturers: Subject to compliance with requirements, provide products of one of the following:

1. Dur-O-Wall, Inc.
2. Heckman Building Products, Inc.
3. Hohmann & Barnard, Inc.
4. Masonry Reinforcing Corp. of America.

2.5 MISCELLANEOUS MASONRY ACCESSORIES

A. Control Joint Strips: Material as specified below, designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.

1. Styrene-butadiene rubber compound complying with ASTM D-2000, Designation 2AA-805.

2. Polyvinyl chloride complying with ASTM D-2287, General Purpose Grade, Designation PVC-63506.

B. Acceptable Products: Subject to compliance with requirements, provide “Mortar Net” manufactured by Mortar Net USA, Ltd. Or equal.

2.6 SOURCE QUALITY CONTROL

A. Brick Tests: For each type and grade of brick indicated, units will be tested by qualified independent testing laboratory per ASTM C-67 except 5 bricks will be selected at random for each 10,000 units or fraction thereof installed.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Comply with ACI 530.1.
B. Discard units with cracked faces, chipped edges or corners, or other defects that do not conform with reference standard ASTM C216.
C. Thickness: Build cavity and composite walls, floors and other masonry construction to the full thickness shown. Build single-wythe walls to the actual thickness of the masonry units, using units of nominal thickness shown or specified.
D. Build chases and recesses as shown and as required for the work of other trades. Provide not less than 8" of masonry between chase or recess and jamb of openings, and between adjacent chases and recesses.
E. Leave openings for equipment to be installed before completion of masonry work. After installation of equipment, complete masonry work to match work immediately adjacent to the opening.
F. Cut masonry units using motor-driven saws designed to provide clean sharp, unchipped edges. Cut units as required to provide pattern shown and to fit adjoining work neatly. Use full units without cutting wherever possible.

3.2 CONSTRUCTION TOLERANCES

A. Comply with construction tolerances of referenced unit masonry standard.

3.3 LAYING MASONRY WALLS

A. Layout walls in advance for accurate spacing of surface bond patterns, with uniform joint widths and to properly locate openings, movement-type joints, returns and offsets. Avoid the use of less-than-half size units at corners, jambs and wherever possible at other locations.
B. Lay-up walls to comply with specified construction tolerances, with courses accurately spaced and coordinated with other work.
C. Pattern Bond:

1. Exposed Masonry: Unless shown otherwise, lay in running bond vertical joint in each course centered on units in courses above and below.
2. Corners: Bond and interlock each course of each wythe. Do not use units with less than 4” horizontal face dimensions at corners or jambs. For 6” nominal thickness walls, use special shape units to maintain running bond pattern.

D. Stopping and Resuming Work: Rack back 1/2-masonry unit length in each course; do not tooth. Clean exposed surfaces of set masonry, wet units lightly (if required) and remove loose masonry units and mortar prior to laying fresh masonry.

3.4 MORTAR BEDDING AND JOINTING

A. Brick: Lay brick with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not slush head joints.

B. Maintain joint widths shown, except for minor variations required to maintain bond alignment. If not otherwise indicated, lay walls with 3/8" joints.

C. Cut joints flush for masonry walls which are to be concealed or to be covered by other materials, unless otherwise indicated.

D. Tool exposed joints slightly concave using a jointer larger than joint thickness, unless otherwise indicated.

E. Remove masonry units disturbed after laying; clean and relay in fresh mortar. Do not pound corners at jambs to fit stretcher units which have been set in position. If adjustments are required, remove units, clean off mortar, and reset in fresh mortar.

3.5 STRUCTURAL BONDING OF MULTI-WYTHE MASONRY

A. By Horizontal Joint Reinforcing: Use continuous horizontal joint reinforcing embedded in horizontal joints for bond tie between wythes. Install at not more than 16” o.c. vertically as specified.

B. Corners: Provide interlocking masonry unit bond in each course at corners, unless otherwise shown.

1. Provide continuity at corners with prefabricated “L” units, in addition to masonry bonding.

C. Intersecting and Abutting Walls: Unless vertical expansion or control joints are shown at juncture, provide same type of bonding specified for structural bonding between wythes and space as follows:

1. Provide continuity with horizontal joint reinforcement using prefabricated “T” units.

3.6 CAVITIES/AIR SPACES

A. Keep cavity clean of mortar droppings and other materials during construction. Parge joints facing cavity flat.

B. Anchorage to Back-Up: Tie exterior wythe to back-up with continuous horizontal joint reinforcing embedded in mortar joints at not more than 16” o.c. vertically.

3.7 HORIZONTAL JOINT REINFORCEMENT

A. General: Provide continuous horizontal joint reinforcing as indicated and spaced not more than 16" vertically. Install longitudinal side rods in mortar for their entire length with a minimum cover of 5/8" on exterior side of walls and 1/2" at other locations. Lap reinforcement a minimum of 6".

1. Cut or interrupt joint reinforcement at control and expansion joints with reinforcing, unless otherwise indicated.

B. Provide continuity at corners and wall intersections by use of prefabricated "L" and "T" sections. Cut and bend reinforcement units as directed by manufacturer

for continuity at returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.8 CONTROL AND EXPANSION JOINTS

A. General: Provide horizontal and vertical expansion, control and isolation joints in masonry where shown and to match existing. Build-in related masonry accessory items as the masonry work progresses.

B. Compressible Fillers: Build-in compressible fillers where indicated and to match existing.

1. Build in horizontal pressure relieving joints where indicated; construct joints by either leaving an air space or inserting compressible joint filler of width required to permit installation of sealant and backer rod.

C. If not indicated, provide control joints in concrete masonry not exceeding 25 feet and in accordance with referenced standards.

3.9 REPAIR, POINTING AND CLEANING

A. Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units as intended. Provide new units to match adjoining units and install in fresh mortar or grout, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge any voids or holes, except weep holes, and completely fill with mortar. Point-up all joints at corners, openings and adjacent work to provide a neat, uniform appearance, properly prepared for application of sealants.

C. Do not allow excess mortar to harden on the ground face block finished surfaces. Remove green mortar with burlap or dry cloth.

D. Final Cleaning: After mortar is thoroughly set and cured, clean masonry as follows:

1. Testing Cleaning Methods: Test on sample wall panels; leave 1/2 panel uncleaned for comparison purposes.

a. Pre-Cleaning Conference: Obtain Architect's acceptance of sample cleaning before proceeding. Review cleaning agents proposed for use and whether special methods will be required for removing localized stains, and, if so, what agents will be used.

2. Preliminary Cleaning: Remove large mortar particles by hand with wooden paddles and non-metallic scrape hoes or chisels.

3. Use of Cleaning Agents:

a. For brick, and if required for limestone and concrete unit masonry, provide proprietary cleaning agent designed for new

masonry surfaces of types indicated; expressly approved for intended use by manufacturers of masonry units being cleaned; complying with environmental regulations; and that will not harm materials with which it will come in contact. If requested by Architect, submit data substantiating compliance with above requirements.

b. Protect adjacent surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film or waterproof masking tape.

c. Saturate wall surfaces with water prior to application of cleaners; remove cleaners promptly by rinsing thoroughly with clear water.

4. Brick: Use bucket and brush hand cleaning method described in BIA "Technical Note No. 20 Revised" to clean brick masonry except use masonry cleaner.

E. Protection: Provide final protection and maintain conditions in a manner acceptable to Installer, which ensures unit masonry work being without damage and deterioration at time of Substantial Completion.

END OF SECTION 042000

SECTION 045000 MASONRY RESTORATION AND CLEANING

PART 1 – GENERAL

1.1 SUMMARY

A. Masonry restoration work includes the following:

1. Brick replacement

1.2 SUBMITTALS

A. Product Data: Submit manufacturer's technical data for each product indicated including recommendations for their application and use. Include test reports and certifications substantiating that products comply with requirements.

B. Restoration Program: Submit written program for each phase of restoration process including protection of surrounding materials on building and site during operations. Describe in detail materials, methods and equipment to be used for each phase of restoration work.

C. Samples: Submit, for verification purposes, prior to mock-up erection, samples of the following:

D. Each new exposed masonry material to be used for replacing existing materials. Include in each set of samples the full range of colors, colors and textures to be expected in completed work.

1. For bricks provide straps or panels containing not less than 4 units.
2. Each type mortar for pointing and masonry rebuilding and repair.
3. Each type of anchor.

1.3 QUALITY ASSURANCE

A. Field-Constructed Mock-Ups: Prior to start of general masonry restoration, prepare the following sample panels on building where directed by Architect. Obtain Architect's acceptance of visual qualities before proceeding with the work. Retain acceptable panels in undisturbed condition, suitably marked, during construction as a standard for judging completed work.

B. Cleaning: Demonstrate materials and methods to be used for cleaning each type of masonry surface and condition on sample panels of approximately 25 sq. ft. in area.

1. Test adjacent non-masonry materials for possible reaction with cleaning materials.
2. Allow waiting period of duration indicated, but not less than 7 calendar days, after completion of sample cleaning to permit study of sample panels for negative reactions.

C. Re-pointing: Prepare 2 separate sample areas of approximately 3' high by 6' wide for each type of re-pointing required, one for demonstrating methods and quality of workmanship expected in removal of mortar from joints and the other for demonstrating quality of materials and workmanship expected in pointing mortar joints.

D. Masonry Repair: Prepare sample panels of size indicated for each type of masonry material indicated to be patched, rebuilt or replaced. Erect mock-up panels into an existing wall, unless otherwise indicated, to demonstrate quality of materials and workmanship.

1.4 DELIVERY, STORAGE AND HANDLING

A. Carefully pack, handle, and ship masonry units and accessories strapped together in suitable packs or pallets or in heavy cartons. Unload and handle to prevent chipping and breakage.

B. Deliver other materials to site in manufacturer's original and unopened containers and packaging, bearing labels as to type and names of products and manufacturers.

C. Protect masonry restoration materials during storage and construction from wetting by rain, snow or ground water, and from staining or intermixture with earth or other types of materials.

D. Protect grout, mortar and other materials from deterioration by moisture and temperature. Store in a dry location or in waterproof containers. Keep containers tightly closed and away from open flames. Protect liquid components from freezing. Comply with manufacturer's recommendations for minimum and maximum temperature requirements for storage.

1.5 PROJECT CONDITIONS

A. Clean masonry surfaces only when air temperatures are 40 degrees F and above and will remain so until masonry has dried out, but for not less than 7 days after completion of cleaning.

B. Do not re-point mortar joints or repair masonry unless air temperatures are between 40 degrees F and 80 Degrees F and will remain so for at least 48 hours after completion of work.

1.6 SEQUENCING/SCHEDULING

A. Perform masonry restoration work in the following sequence:

1. Repair existing masonry including replacing existing masonry with new masonry materials.
2. Rake-out existing mortar from joints indicated to be re-pointed.
3. Clean existing masonry surfaces.
4. Re-point existing mortar joints of masonry indicated to be restored.

PART 2 – PRODUCTS

2.1 MASONRY MATERIALS

A. Face Brick and Accessories: Provide face brick and accessories, including units for lintels, arches, corners, and other special ground, cut, or sawed shapes where required to complete masonry restoration work.

1. Provide units with color, surface texture and size to match existing brickwork.

B. Building Brick: Provide building brick complying with ASTM C-62 for masonry work concealed from view, of same vertical dimension as face brick.

1. Grade SW.

2.2 MORTAR MATERIALS

A. Portland Cement: ASTM C-150, Type I.

B. Hydrated Lime: ASTM C-207, Type S.

C. Aggregates for Mortar: ASTM C-144.

D. For pointing mortar provide sand with rounded edges.

E. Match size, texture and gradation of existing mortar as closely as possible.

F. Colored Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes. Use only pigments with record of satisfactory performance in masonry mortars.

G. Water: Clean, free of oils, acids, alkalis and organic matter.

H. Aggregate for Grout: ASTM C-404.

2.3 CLEANING MATERIALS AND EQUIPMENT

A. Water for Cleaning: Clean, potable, free of oils, acids, alkalis, salts, and organic matter.

1. Warm Water: Heat water to temperature of l40 degrees F to 180 degrees F (60 deg.C - 82 deg.C).
2. Brushes: Fiber bristle only.

B. Alkaline Prewash Cleaner: Manufacturer's standard alkaline cleaner for prewash applications only which are followed by acidic cleaner of type indicated for afterwash.

1. Product: Subject to compliance with requirements, provide SureKlean 766 Prewash, by ProSoCo, Inc.

C. Acidic Cleaner: Manufacturer's standard strength acidic masonry restoration cleaner composed of hydrofluoric acid blended with other acids including trace of phosphoric acid and combined with special wetting systems and inhibitors.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Diedrich 101 Masonry Restorer; Diedrich Chemicals.
b. Sure Klean Restoration Cleaner; ProSoCo, Inc.

D. Spray Equipment: Provide equipment for controlling spray application of water and chemical cleaners, if any, at rates indicated for pressure, measured at spray tip, and for volume.

E. For spray application of chemical cleaners provide low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with cone-shaped spray-tip.

F. For spray application of water provide fan-shaped spray-tip which disperses water at angle of not less than 15 degrees.

G. For spray application of heated water provide equipment capable of maintaining temperature, at flow rates indicated, between 140 degrees F and 180 degrees F.

2.4 MORTAR MIXES

A. Measurement and Mixing: Measure cementitious and aggregate material in a dry condition by volume or equivalent weight. Do not measure by shovel, use known measure. Mix materials in a clean mechanical batch mixer.

B. Mixing Pointing Mortar: Thoroughly mix cementitious and aggregate materials together before adding any water. Then mix again adding only enough water to produce a damp, unworkable mix which will retain its form when pressed into a ball. Maintain mortar in this dampened condition for l-to- 2 hours. Add remaining water in small portions until mortar of desired consistency is reached. Use mortar within 30 minutes of final mixing; do not retemper or use partially hardened material.

C. Colored Mortar: Produce mortar of color required by use of selected ingredients. Do not adjust proportions without Architect's approval.

D. Do not use admixtures of any kind in mortar, unless otherwise indicated.

2.5 MORTAR PROPORTIONS

A. Pointing Mortar for Brick: One part white portland cement, 2 parts lime and 6 parts colored mortar aggregate.

B. Rebuilding Mortar: Comply with ASTM C-270, Proportion Specification, Type N, unless otherwise indicated with cementitious material content limited to portland cement- lime.

PART 3 – EXECUTION

3.1 PREPARATION

A. General: Comply with recommendations of manufacturers of chemical cleaners for protecting building surfaces against damage from exposure to their products.

B. Protect persons, motor vehicles, surrounding surfaces of building whose masonry surfaces are being restored, building site, and surrounding buildings from injury resulting from masonry restoration work.

C. Prevent chemical cleaning solutions from coming into contact with pedestrians, motor vehicles, landscaping, buildings and other surfaces which could be injured by such contact.

D. Do not clean masonry during winds of sufficient force to spread cleaning solutions to unprotected surfaces.

E. Dispose of run-off from cleaning operations by legal means and in manner which prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.

F. Erect temporary protection covers over pedestrian walkways and at points of entrance and exit for persons and vehicles which must remain in operation during course of masonry restoration work.

G. Protect glass, unpainted metal trim and polished stone from contact with acidic chemical cleaners by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape. Apply masking agent to comply with manufacturer's recommendations. Do not apply liquid masking agent to painted or porous surfaces.

H. Protection can be eliminated subject to Architects approval, if testing demonstrates no detrimental effect from exposure to cleaning solutions.

I. Protect unpainted metal from contact with alkali chemical cleaners by covering them either with liquid strippable masking agent or polyethylene film and waterproof masking tape.

J. Removal of Plant Growth: Remove plant, moss and shrub growth completely from masonry surfaces. Carefully remove plants, creepers and vegetation by cutting at roots and allowing drying as long as possible prior to removal. Remove loose soil or debris from open masonry joints to whatever depth it occurs.

K. Apply ammonium sulfamate or other acceptable root killing material to plant roots, in accordance with manufacturer's instructions. Do not apply materials to plants or vegetation to remain.

3.2 BRICK REMOVAL

A. Carefully remove by hand at locations indicated any brick which are damaged, spalled or deteriorated. Cut out full units form joint to joint and in manner to permit replacement with full size units.

B. Support and protect masonry indicated to remain which surrounds removal area.

C. Salvage as many whole, undamaged bricks as possible.

D. Remove mortar, loose particles and soil from salvaged brick by cleaning with brushes and water. Store brick for reuse.

E. Clean remaining brick at edges of removal areas by removing mortar, dust, and loose debris in preparation for rebuilding.

3.3 BRICK REBUILDING

A. Install new or salvaged brick to replace removed brick. Fit replacement units into bonding and coursing pattern of existing brick. If cutting is required use motor driven saw designed to cut masonry with clean, sharp unchipped edges.

B. Lay replacement brick with completely filled bed, head and collar joints. Butter ends with sufficient mortar to fill head joints and shove into place. Wet clay brick which have ASTM C-67 initial rates of absorption (suction) of more than 30 grams per 30 sq. in. per minute. Use wetting methods which ensure that units are nearly saturated but surface dry when laid. Maintain joint width for replacement units to match existing.

C. Tool exposed mortar joints in repaired areas to match joints of surrounding existing brickwork.

3.4 CLEANING EXISTING MASONRY, GENERAL

A. Proceed with cleaning in an orderly manner; work from top to bottom of each scaffold width and from one end of each elevation to the other.

B. Use only those cleaning methods indicated for each masonry material and location.

C. Perform each cleaning method indicated in a manner which results in uniform coverage of all surfaces, including corners, moldings, interstices and which produces an even effect without streaking or damage to masonry surfaces.

D. Rinse off chemical residue and soil by working upwards from bottom to top of each treated area at each stage or scaffold setting.

3.5 FINAL CLEANING

A. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter using stiff nylon or bristle brushes and clean water, spray applied at low pressure.

1. Use of metal scrapers or brushes will not be permitted.
2. Use of acid or alkali cleaning agents will not be permitted.

END OF SECTION 045000

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SECTION 070001 - WATERPROOFING, DAMPPROOFING AND CAULKING

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Time, Manner and Requirements for Submitting Sub-Bids:

1. Each sub-bid submitted for work required under this Section shall be on forms furnished in this specification and in accordance with the provisions of M.G.L. c.149 SS44A-J. Sub-bidders must be DCAM Certified in the listed trade and shall include a Current DCAM Sub-bidder Certificate of Eligibility and signed DCAM Sub-bidder's Update Statement with their bid.

2. Sub-Bids submitted shall be accompanied by BID BOND, CERTIFIED CHECK, or TREASURER'S CHECK, or CASHIERS CHECK, issued by a responsible bank or trust company, payable to the City of Worcester, in the amount of five percent (5%) of the bid. A sub-bid accompanied by any other form of bid deposit may be rejected.

C. Sub Sub-Bid Requirements: None required under this Section.

D. Reference Drawings: The Work of this Filed Sub Bid is shown on the following Contract Drawings:

NUMBER	SHEET NAME
A-2	Details, detail 4
R-1	Union Station Garage - Grade Level Floor Plan (Legend and Notes only)
R-2	Union Station Garage - First Level Framing Plan
R-3	Union Station Garage - Second Level Framing Plan
R-4	Union Station Garage - Third Level Framing Plan
R-5	Union Station Garage - Fourth Level Framing Plan
R-6	Union Station Garage - Fifth Level Framing Plan
R-7	Union Station Garage - Elevation Drawings
R-9	Union Station Garage - Typical Details - Sheet 2
R-10	Union Station Garage - Typical Details - Sheet 3

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. All Work of Section 071200 – Traffic Bearing Waterproofing Membrane.

2. All Work of Section 071400 – Clear Penetrating Concrete Sealers.
3. All Work of Section 079000 – Caulking, Sealing and Joint Fillers.
4. All Work of Section 079100 – Expansion Joint Seals.

B. Alternates: Not Applicable.

END OF SECTION

SECTION 071200 TRAFFIC BEARING WATERPROOFING MEMBRANE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SCOPE OF WORK

This work shall consist of shotblasting or other approved methods of cleaning of horizontal concrete surfaces and vertical surfaces, and the installation of a thin waterproofing membrane system as specified at the roof level pour strips and inverted tee beams. This work shall also consist of the installation of a waterproofing leveling course at locations of scaled concrete. Waterproofing work also consists of epoxy and sand repair at tee connections, replacing the failed sealant at the tee anchor pockets with epoxy and sand, as well as replacing the failed mortar pockets at the wall precast connections with epoxy and sand.

No substitutions to proposed systems in bid proposals other than the waterproofing membranes specified hereinafter shall be allowed unless approved in writing by the Consultant.

1.3 GENERAL

A. The work of this Section includes, but is not limited to, surface preparation, installation of a liquid applied elastomeric membrane system to provide a waterproof, chemical and abrasion resistant non-skid traffic bearing topping.

B. Examine existing surfaces and verify existing conditions. Determine acceptability of the concrete surfaces and notify, in writing, the General Contractor and the Consultant of acceptance. Verify dimensions as no extras will be allowed for inconsistency in dimensions.

C. Cleaning and preparation of existing surfaces to receive materials shall be the Contractor's responsibility. Prepare surfaces as specified hereinafter and as recommended by manufacturer of the material selected.

D. Provide and maintain barricades and traffic control at special coating areas during installation and curing period for vehicular and pedestrian traffic.

1.4 QUALIFICATIONS

A. Work specified herein shall be performed by and be the responsibility of the Installation Contractor authorized, approved and qualified by the manufacturer of materials used; having necessary equipment and facilities to fulfill requirements of the manufacturer and this section.

B. Manufacturer Qualifications: Manufacturer shall provide evidence showing that the specified materials have been manufactured by the same source and successfully installed on a yearly basis for a minimum of ten years on projects of similar scope and complexity. Manufacturer to be ISO 9001 certified.

C. Installer Qualifications: Waterproofing installer shall demonstrate qualifications to perform the work of this Section by submitting the following documentation:

1. Licensing by the waterproofing manufacturer as an applicator of the product to be used in order to provide a warranty as described in Section 1.08 A.

2. List of at least five projects (with reference names and phone numbers) satisfactorily completed under the current company name, of similar scope and complexity to this project. Previous experience submittal shall correspond to specific membrane system proposed for use by applicator.

3. A minimum of five (5) years in business under the same name.

1.5 SUBMITTALS

A. Manufacturer's Data: Submit specifications, installation instructions and general recommendations by the manufacturer of fluid applied waterproofing materials. Include manufacturer's certified test data showing compliance with the requirements. Provide copy of license agreement between manufacturer and installer indicating division of warranty responsibility.

B. Shop Drawings: Submit shop drawings showing large scale details of all edge terminations, joint treatments, penetration or projections and flashing conditions.

C. Samples: Submit complete samples of each membrane system to be used. Sample shall be applied to plywood or similar rigid material.

D. As-Built Information: Upon completion of the work and prior to final payment, submit two (2) maintenance manuals identified with the project name, location and date, types of coating systems applied and drawings indicating the types of coating systems and their location in the structure. Include a schematic drawing of each membrane type which clearly identified the successive coats or layers of the membrane system. Identify each coat or layer by dry film thickness or application rate and by manufacturer's reference number or name which specifically identifies the product used for each coat. Include recommendations for routine care and maintenance. Provide list of contractors nearest the project location who are qualified to perform repairs to the membrane. Identify common causes of damage and include instructions for temporary patching until permanent repairs can be made by qualified personnel.

E. VOC Requirements: Where applicable, the manufacturers shall ensure that all components of specified products do not exceed volatile organic compound (VOC) limits of 400 g/l. Projects in the following locations are affected by this requirement.

Maricopa County (Arizona), California (excluding LA, Orange, San Bernadino and Riverside Counties), Connecticut, Delaware, Illinois, Indiana, Maine, Maryland, Massachusetts, New York, New Jersey, New Hampshire, Ohio, Pennsylvania, Vermont, Rhode Island, Washington DC and Arlington County, Alexandria, Fairfax County, Fairfax, Loudoun County, Falls Church, Prince William County, Manassas, Manassas Park, Stafford County (all northern Virginia).

1.6 DELIVERY AND STORAGE

A. Deliver materials to project site in sealed, original packages or containers bearing name and brand of manufacturer. Each container shall have manufacturer's printed label. Materials shall be stored in the area designated by the General Contractor or Consultant.

B. Upon delivery, notify the Consultant. Only materials brought to area and approved may be used.

C. Store materials in single place designated by Owner and/or Consultant. Keep storage place neat and clean. Cleaning rags and waste materials shall be deposited in metal containers having tight covers or removed from the garage each night. Every precaution shall be taken to avoid danger of fire. Provide dry chemical or CO2 fire extinguishers in areas. Allow no smoking or open containers or solvents. Store solvents in safety cans.

D. Empty containers used on job shall have labels canceled and shall be marked as to reuse.

1.7 JOB CONDITIONS

A. A specified coating shall not be applied if weather is too cold, raining, snowing or if any other conditions exist that will not permit proper application or curing of coating. Follow manufacturer's written directions. Humidity should not deviate from acceptable ranges during application and curing. Protection required for proper installation and curing shall be the responsibility of the Coating Contractor and shall be reflected in Bid.

B. Protect adjacent surfaces and materials with covering, duct tape and drop cloths as required to keep adjacent surfaces free of coating. Upon completing, remove protection and clean. Surfaces soiled or damaged by special coating shall be cleaned or replaced at no extra cost to Owner.

C. Proceed with the installation of waterproofing only after the substrate construction has been completed and cured and after penetrating components have been installed, so that the membrane will not be penetrated or damaged by subsequent work.

D. When payment for elastomeric deck coating is based on area of application, the area used in calculations shall be horizontal surfaces only.

1.8 WARRANTY

A. Materials Manufacturer and Installation Contractor shall be jointly responsible and shall submit an affidavit signed by both parties warranting the installed system for a minimum period of five years from date of final completion. The Installer shall repair or replace membrane which leaks water, deteriorates excessively, wears prematurely or otherwise fails to perform as required within the guarantee period, due to failure of materials or workmanship. The guarantee shall include an agreement to remove and reinstall other work which has been superimposed on elastomeric waterproofing work as required to repair or replace the waterproofing system if known at time of installation.

PART 2 - PRODUCTS

2.1 WATERPROOFING SYSTEM

A. WATERPROOFING

1. "Auto-Gard E," as manufactured by Neogard (www.neogard.com).

   The system consists of an epoxy or urethane primer applied to the cleaned concrete surface at a minimum rate of 300 square feet per gallon no more than 24 hours prior to base coat application; when cured, apply FC7500/FC7960 urethane base coat at an average thickness of 25 mils dry (25 mils wet). When cured, apply 70714/70715-09 epoxy wear coat at an average thickness of 16 mils dry (16 mils wet) and immediately broadcast 16/30 mesh clean dry silica sand at a rate of 15 to 20 pounds per 100 square feet and backroll. When cured, apply a second coat of 70714/70715-09 epoxy wear coat at an average thickness of 16 mils dry (16 mils wet) and immediately broadcast 16/30 mesh clean dry silica sand at a rate of 15 to 20 pounds per 100 square feet. When cured, apply FC7540/FC7964 aliphatic urethane topcoat to yield 14 dry mils.

2. "Iso-Flex 750/760EU-HVT," as manufactured by Lym-Tal (www.lymtal.com).

   The system consists of a solvent-free epoxy primer applied to the cleaned concrete surface at a rate of 200 square feet per gallon no more than 24 hours prior to base coat application; the 750 base coat will be a polyurethane applied to an average thickness of 25 mils dry (25 mils wet). The wearing coat is Epoxy 200, applied at an average thickness of 16 mils dry (16 mils wet) broadcast 16/30 mesh clean dry silica sand at a rate of 15 to 20 pounds per 100 square feet or to excess. The second wearing coat is Epoxy 200, applied at an average thickness of 16 mils dry (16 mils wet) broadcast with 16/30 mesh clean dry silica sand at a rate of 15 to 20 pounds per 100 square feet. When cured, apply 750 AL topcoat to achieve 14 dry mils.

3. MasterSeal Traffic 2530 (Conipur E) Deck Coating System," as manufactured by BASF Building Systems (www.buildingsystems.basf.com).

   The system consists of the 100% solids polyurethane primer MasterSeal P 255 (Conipur 78) applied at a minimum rate of 300 square feet per gallon. Apply MasterSeal M 265 (Conipur 265z) Base Coat (2 component polyurethane 100% solids) at a rate of 25 mils dry (25 mils wet). Allow base to cure and then apply MasterSeal 350 (Traficguard EP35) epoxy at a rate of 16 mils dry and broadcast 16/30 mesh clean dry silica sand at a rate of about 15-20 pounds per 100 square feet in all areas. Allow MasterSeal 350 (Traficguard EP35) to cure and then apply second coat of MasterSeal 350 (Traficguard EP35) epoxy at a rate of 16 mils dry and broadcast 16/30 mesh clean dry silica sand at a rate of about 15-20 pounds per 100 square feet in all areas. When cured, apply Masterseal 295 topcoat to achieve 14 dry mils.

4. "Sikalastic 22 Lo-Mod Traffic System" as manufactured by Sika Corporation (www.sikausa.com).

   The system consists of Sikafloor FTP epoxy primer applied to the cleaned concrete surface at a minimum rate of 300 square feet per gallon no more than 48 hours prior to base coat application; when tack free, apply Sikalastic 720 basecoat at a nominal thickness of 25 mils dry (25 mils wet). When tack free, apply Sikadur 22 Lo-Mod bindercoat at a nominal thickness of 16 mils dry (16 mils wet) and broadcast 16/30 mesh clean dry silica sand at a rate of about 15-20 pounds per 100 square feet in all areas and backroll. When tack free, apply a second top coat of Sikadur 22 Lo-Mod bindercoat at a nominal thickness of 16 mils dry (16 mils wet) and broadcast 16/30 mesh clean dry silica sand at a rate of about 15-20 pounds per 100 square feet in all areas. When cured, apply 745 AL topcoat to achieve 14 dry mils.

B. WATERPROOFING MEMBRANE (Base Coat)

5. The base coat (membrane) shall meet the following minimum performance criteria:

   a. Minimum Tensile Strength (ASTM D412):
      Base Coat - 1,000 psi
      Top Coat - 2,000 psi

   b. Minimum Elongation (ASTM D412):
      Base Coat - 350%

   c. Minimum Adhesion – one of the following:

      ASTM D903:Base Coat - 20 psi
      ASTM C794: Base Coat – 25 pli
      ASTM D4541: Base Coat – 250 psi

ACI 503: Failure occurs in concrete when fc<6000 psi

d. A light application of primer compatible with the elastomeric seal coat shall be applied onto the clean, dry concrete surface. The elastomeric coating shall be applied uniformly to the primed surface. The elastomeric base coat shall be applied in strict accordance with manufacturer's requirements for the system and verified by wet mil thickness testing (minimum one test per 500 square feet). The coating shall be allowed to cure adequately. Special treatment shall be provided at all construction joints, cove joints and at all cracks over 1/16" in width. This special treatment shall be included in the bid price for the waterproofing membrane installation. The coating shall also be applied at base of columns, walls and curbs to produce a 4" minimum high base.

6. Minimum System Thickness (Dry Mils): 25 mils

C. WEARING COURSE

1. A compatible wearing course shall be applied over the base coat in accordance with the manufacturer's instructions. A selected aggregate shall be broadcast evenly over the surface and fall on the surface in vertical direction so as not to displace uncovered coating.

2. Aggregates should be spread to an excess thickness until surface appears dry. After the coating has sufficiently cured, the excess aggregates shall be removed and the tie coat shall be applied to the surface.

D. LEVELING COURSE (IF REQUIRED)

1. A compatible leveling course shall be applied directly onto the concrete surface after cleaning and prior to application of the primer. The leveling course is intended to fill and smooth pop-outs, scaling, depressions and pitting in the concrete surface due to abrasion, finishing problems or other existing conditions. Products listed below should be confirmed with the manufacturer's instructions.

Neogard - Leveling of the concrete surface prior to membrane system application in order to achieve a suitable substrate shall be performed using a Neogard 70714/70715-09 epoxy and sand mixture or FC base coat, depending on profile of concrete.

Lym-Tal - Leveling of the concrete surface prior to membrane system application in order to achieve a suitable substrate shall be performed using Iso-Flex 750 base coat extended with sand.

Conipur - Leveling of the concrete surface prior to membrane system application in order to achieve a suitable substrate shall be

performed using Traficguard EP35 two component, fast-setting 100% solids epoxy, extended with sand as needed.

PART 3 - EXECUTION

3.1 CONDITION OF SUBSTRATE

A. Examine the substrate and the conditions under which the elastomeric waterproofing work is to be applied. Do not proceed with the work until unsatisfactory conditions have been corrected and approved by the manufacturer's representative.

1. Installation of products constitutes Installers and Manufacturer's acceptance of existing construction.

3.2 PREPARATION OF SUBSTRATE

A. Clean the substrate of protrusions, dust, debris, oily materials and other substances detrimental to the work, as recommended by the waterproofing system's manufacturer.

1. Shot blast horizontal surfaces to remove contaminants and to provide a clean uniform textured surface. Any other proposed cleaning methods must be submitted and approved by the Engineer.

2. Clean vertical surfaces of column bases, spandrels, walls, protrusions, etc., to provide a clean uniform textured surface.

B. Install cant strips and similar accessories as shown and as recommended by the waterproofing manufacturer (even though not shown) in the manner recommended by the manufacturer.

3.3 FLASHINGS, PRIMERS, AND JOINT CONTROL

A. Cracks/Construction Joints: At locations of possible movement in the substrate construction, including cracks which have developed and construction joints, prepare the substrate to increase the fluid applied waterproofing capability for bridging the movement without failure. Use only products which have been determined to be compatible with the elastomeric waterproofing.

B. Fill voids and non-moving cracks and joints in the substrate with sealant or other compounds as recommended by the waterproofing manufacturer for compatibility. Fill rough areas of substrate (rough within limitations specified by the manufacturer) with a feathered-out coating of elastomeric waterproofing, squeegee-applied to form a smooth top surface.

C. Prime substrate as recommended by the waterproofing system's manufacturer.

D. Mask off adjoining surfaces not to receive fluid applied waterproofing, to effectively prevent the spillage or migration of materials outside the membrane area.

3.4 INSTALLATION

A. Manufacturer's Technical Representative: Start the installation of elastomeric waterproofing membrane, only in the presence and with the advice of the manufacturer's technical representative. A series of four (4) wet mill gauge tests shall be conducted for every 1,000 sq. ft. on the first day of installation in the presence of the representative to ensure proper coverage rate.

B. General: Comply with manufacturer's instruction, except where more stringent requirements are shown or specified, and except where project conditions require extra precautions or provisions to ensure satisfactory performance of the work.

C. Mix separately packaged components in accordance with manufacturer's instructions.

D. Apply the elastomeric membrane to the primed deck within the time specified by the manufacturer.

E. Apply a uniform coating of cold applied elastomeric waterproofing to the substrate and adjoining surfaces indicated to receive the membrane.

1. Apply coating by hand, complying with manufacturer's recommendations regarding horizontal and vertical surfaces.

2. Provide waterproof membrane at base of columns, spandrels, to produce a 6" high base. Curb surfaces shall be considered floors and waterproofed unless otherwise noted.

F. Wearing Surface: Apply top coat in one or two applications to achieve the specified dry film thicknesses.

1. While coating is still fluid, uniformly broadcast aggregate over the surface at the rate specified.

2. After top coat has cured, remove all excess aggregate from the deck surface.

3. Apply a tie coat to the cured surface to encapsulate the top layer of aggregate.

G. Permit cold applied membrane to cure without delay, and under conditions which will not contaminate or deteriorate the fluid applied waterproofing material. Block off traffic and protect membrane from physical damage.

3.5 CLEAN-UP

A. Upon completion of work, carefully examine entire installation. Correct all defective or damaged work.

B. Upon completion, or at such other times as directed, remove all surplus materials, cartons, rubbish and debris resulting from these operations and legally dispose of off-site.

3.6 PERFORMANCE REQUIREMENTS

A. It is required that traffic topping be watertight and not deteriorate excessively under normal weather exposure and for normal traffic conditions in applications indicated, not under manufacturer-recommended cleaning procedures, for period of warranty.

B. It is required that traffic topping work not deteriorate under spillage of motor oil, transmission fluids, and other motor vehicle operating compounds, nor for exposure to normal ice/snow melting substances not specifically excluded by manufacturer's product information.

3.7 PROTECTION

A. Provide protection to ensure that work will be without damage or deteriorations at time of final acceptance.

END OF SECTION 071200

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SECTION 071400 CLEAR PENETRATING CONCRETE SEALERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. 079000 – Caulking, Sealing and Joint Fillers

1.2 SCOPE OF WORK

A. Provide concrete penetrating sealer system at concrete slab-on-grade floor surfaces, and 6" of all vertical concrete surfaces adjacent to horizontal floor surfaces as herein specified, unless otherwise noted.

1.3 QUALITY CONTROL

A. Codes and Standards:

1. Specified products shall comply with the provision of the following specification and standards, except as otherwise noted.

   a. NCHRP 244 procedure - Series II & IV.
   b. Scaling Resistance of Concrete (ASTM C-672) - No Scaling.
   c. Alberta Department of Transportation and Utilities Penetrating Sealer for Traffic Bearing Surfaces Type 1B - Water Repellency after Abrasion (minimum) 86.0%.
   d. VOC Requirements: Where applicable, the manufacturers shall ensure that all components of specified products do not exceed volatile organic compound (VOC) limits of 400 g/l.

B. Field Testing Acceptance:

1. Meet or exceed the following requirements for this project based on testing performed on a minimum of three, 3 inch diameter (or larger) core samples removed from the treated area.

   a. Repellency Rating (Waterproofing Performance) - 85% or better, based on comparison of untreated versus treated samples. Test procedure for waterproofing performance shall be according to ASTM D 6489-99, “Standard Test Method for Determining the Water Absorption of Hardened Concrete Treated with a Water Repellent Coating”.

   b. Penetration (1 application) 1/4 inch minimum (6 mm), based on the average of a series of measurements on the split face of core samples.

C. Sealer Coordination:

1. Review other sections of these specifications in which curing compounds or paints, are to be provided on concrete surfaces to be sealed to ensure compatibility with the concrete sealer.

D. Warranty:

1. The system manufacturer shall furnish the Owner a written single-source performance warranty that the Concrete Penetrating Sealer System will be free of defects related to workmanship or material deficiency and meet or exceed the requirements of Part B for a ten (10) year period from the date of substantial completion of the work provided under this section of the specification.

2. Any required repairs under the warranty shall be made by the system manufacturer. The required written warranty shall be provided by the system manufacturer.

1.4 SUBMITTALS

A. Submit manufacturer's product, application and surface preparation specifications, testing data and warranty for approval prior to sealing concrete decks.

B. When payment for sealer application is based on square foot area of application, the area used in calculations shall be horizontal surfaces only.

C. As a condition for payment of the sealer application, the contractor must submit an invoice indicating the delivery and site receipt of the quantity of material calculated and designated for this project. In addition to the calculated quantity, the invoice shall also reflect the project address, or be designated for use on this project, if delivered to the contractor’s address. No leftover material from previous projects will be permitted for use on this project.

1.5 JOB CONDITIONS

A. Environmental Requirements:

1. Do not proceed with application of materials if ambient temperature is below 20 degrees F. or if ice or frost are covering the substrate. For Enviroseal 40, do not proceed with application of materials if ambient temperature is below 40 degrees F.

2. Do not proceed with application if ambient temperature of surface temperature exceeds 100 degrees F.

3. Do not proceed with application of materials in rainy conditions or if rain is anticipated within 8 hours after application. Materials shall not be applied to damp substrates. The surface should be sufficiently dry to observe the spray pattern during application.

PART 2 - PRODUCTS

2.1 SEALER MATERIAL

A. Provide a clean liquid "silane" type sealing compound, minimum 40 percent solid content, which will penetrate the concrete to provide a surface which is resistant to salts, de-icer chemicals, moisture, gasoline, oil and acids. Sealer material shall not permanently alter the appearance or surface texture of concrete surfaces.

B. All penetrating sealers applied shall contain fugitive dye to demonstrate complete and thorough application to surface.

C. Sealer material shall be one of the products offered by the manufacturer's listed below. Substitute materials or manufacturers will not be allowed.

1. Evonik Degussa Corporation – Protectosil BHN. Apply at application rate of 200 sf/gal.
2. BASF Building Systems Inc. – MasterProtect H1000 (Hydrozo 100). Apply at application rate of 200 sf/gal.
3. LymTal International – ISO-FLEX 618-100 CRS. Apply at application rate of 200 sf/gal.

PART 3 - EXECUTION

3.1 PREPARATION

A. Examine surfaces to receive sealer to assure that conditions are acceptable for application of materials. Concrete shall be cured a minimum of 28 days.

B. Remove dirt, dust and materials that will interfere with the proper and effective application of the water repellent coating.

C. All caulking, patching and joint sealants should be installed prior to application of this product.

3.2 INITIAL TEST APPLICATION AND TESTING

A. Test Procedure:

1. Prior to full scale surface preparation and application of selected material, a trial application shall be conducted. The location shall be 11 feet by 11 feet in size for products applied at 125 square feet per gallon or 13 feet 3 inches by 13 feet 3 inches for products applied at 175 square feet per gallon, at a location determined by the Architect. The preferred location will be on a sloping ramp.
2. The trial area shall be cleaned according to manufacturer's recommendations in the same manner as planned for the entire project. This may include sweeping and cleaning with compressed air, water

cleaning under pressure or shotblasting. For the purposes of this test only, sandblasting is an acceptable substitute for shotblasting.

3. Upon completion of surface preparation, a core will be removed from the cleaned surface and tested for water absorption. This is the Untreated Water Absorption value. The test area will then be treated with one gallon of the selected material. From the treated area, two core samples shall be removed. Both cores are to be tested for Treated Water Absorption and split with a chisel and dye tested for depth of sealer penetration. The repellency rating is calculated on the basis of untreated and treated water absorption values.
4. Once field test results are obtained, which meets or exceeds requirements of Section 1.03.B.1.a and 1.03.B.1.b., the contractor will be authorized to perform full scale surface preparation and application of the selected material. Do not proceed with application unless directed in writing by the Architect and Material Manufacturer.
5. Cost of trial area application and testing shall be included in the contractor's price for sealer installation. Testing shall be conducted by the Architect or his designee. Additional quality control testing, if desired by the Owner in other areas or subsequent to the installation to determine warranty performance, shall be paid for by the Owner.

3.3 APPLICATION

A. Product shall be applied at a rate as specified above. Do not dilute or alter the material.

B. Preferred method of application is with low pressure (15 PSI) airless spray equipment or with a heavily-saturated brush or roller. Spray equipment should be equipped with solvent resistant gaskets and hoses.

C. When applying by brush or roller, care will be taken to ensure that sufficient material is being applied to thoroughly saturate the treatment surfaces maintaining the appropriate square foot coverage rate required.

1. Product shall be applied to horizontal surfaces in a single saturating application.
2. Sufficient material shall be applied so that treated surfaces remain wet for a few minutes before penetration into the surface.
3. Surface residues, pools and puddles shall be broomed out thoroughly until they completely penetrate into the surface.
4. Treated surfaces shall be protected from rain and other surface water for a period of not less than eight (8) hours after application.
5. Treated surfaces shall be protected from excessive foot and vehicular traffic for a period of not less than eight (8) hours after application.

3.4 CLEAN-UP

A. When the work of this Section is complete, and at such other times as directed, remove surplus and waste materials, debris, rubbish, equipment, and implements

from the site, and leave the work in a clean, neat and acceptable condition, as approved by the Architect.

END OF SECTION 071400

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SECTION 075000 - MEMBRANE ROOFING

I PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.02 SCOPE OF WORK

A. **Work included:** Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Removing existing roofing systems, cants, flashings, blocking as indicated and all related items down to the original concrete roof deck.

2. New single-ply roofing system on the elevator shaft comprised of recovery board, EPDM membrane, flexible and metal flashings and related adhesives and accessories.

3. Cover tape over all existing seams on the existing EPDM roof to remain.

B. **Alternates:** Not Applicable.

C. **Items to Be Installed Only:** Install the following items as furnished by the designated Sections:

1. None. All items to be installed by this trade, shall be furnished by this trade.

D. **Items to Be Furnished Only:** Furnish the following items for installation by the designated Sections:

1. None.

E. **Related Work Specified Elsewhere:** The following items are not included in the Section, and will be performed under the designated Section:

1. None.

1.03 SUBMITTALS

A. Make submittals under provisions of Section 013000.

B. Prior to starting work, the roofing contractor must submit the following:

1. Shop drawings showing layout, details of construction and identification of materials.
2. Sample of the manufacturer’s Membrane System Warranty.
3. Submit a letter of certification from the manufacturer which certifies the roofing contractor is authorized to install the manufacturer’s roofing system and lists foremen who have received training from the manufacturer along with the dates training was received.

C. Upon completion of the installed work, submit copies of the manufacturer's final inspection to the specifier prior to the issuance of the manufacturer's warranty.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to the job site in the manufacturer's original, unopened containers or wrappings with the manufacturer's name, brand name and installation instructions intact and legible. Deliver in sufficient quantity to permit work to continue without interruption.

B. Comply with the manufacturer's written instructions for proper material storage.

1. Store materials between 60°F and 80°F in dry areas protected from water and direct sunlight. If exposed to lower temperature, restore to 60°F minimum temperature before using.
2. Store materials containing solvents in dry, well ventilated spaces with proper fire and safety precautions. Keep lids on tight. Use before expiration of their shelf life.

C. Insulation must be on pallets, off the ground and tightly covered with waterproof materials. Manufacturer's wrap does not provide sufficient waterproofing.

D. Any materials which are found to be damaged shall be removed and replaced at the applicator's expense.

1.05 WORK SEQUENCE

A. Schedule and execute work to prevent leaks and excessive traffic on completed roof sections. Care should be exercised to provide protection for the interior of the building and to ensure water does not flow beneath any completed sections of the membrane system

B. Do not disrupt activities in occupied spaces.

1.06 USE OF THE PREMISES

A. Before beginning work, the roofing contractor must secure approval from the Owner for the following:

1. Areas permitted for personnel parking.
2. Access to the site.
3. Areas permitted for storage of materials and debris.
4. Areas permitted for the location of cranes, hoists and chutes for loading and unloading materials to and from the roof.

1.07 EXISTING CONDITIONS

A. The existing roofing system generally consists of:

1. Concrete deck.
2. Protection board.
3. Fully adhered EPDM roofing.

B. If discrepancies are discovered between the existing conditions noted on the Drawings and what is uncovered in the field, immediately notify the owner's representative by phone and solicit the manufacturer's approval prior to commencing with the work. Necessary steps shall be taken to make the building watertight until the discrepancies are resolved.

1.08 JOB SITE CONDITIONS

A. The roofing contractor shall adequately protect building, paved areas, service drives, lawn, shrubs, trees, etc. from damage while performing the required work. Provide canvas, boards and sheet metal (properly secured) as necessary for protection and remove protection material at completion. The contractor shall repair or be responsible for costs to repair all property damaged during the roofing application.

B. During the roofing contractor's performance of the work, the building owner will continue to occupy the existing building. The contractor shall take precautions to prevent the spread of dust and debris, particularly where such material may sift into the building. The roofing contractor shall provide labor and materials to construct, maintain and remove necessary temporary enclosures to prevent dust or debris in the construction area(s) from entering the remainder of the building.

C. Do not overload any portion of the building, either by use of or placement of equipment, storage of debris, or storage of materials.

D. Protect against fire and flame spread. Maintain proper and adequate fire extinguishers.

E. Store moisture susceptible materials above ground and protect with waterproof coverings.

F. Remove all traces of piled bulk materials and return the job site to its original condition upon completion of the work

1.09 SAFETY

A. The roofing contractor shall be responsible for all means and methods as they relate to safety and shall comply with all applicable local, state and federal requirements that are safety related. **Safety shall be the responsibility of the roofing contractor.** All related personnel shall be instructed daily to be mindful of the full time requirement to maintain a safe environment for the facility's occupants including staff, visitors, customers and the occurrence of the general public on or near the site.

1.10 WORKMANSHIP

A. Applicators installing new roof, flashing and related work shall be factory trained and approved by the manufacturer they are representing.

B. All work shall be of highest quality and in strict accordance with the manufacturer's published specifications and to the building owner's satisfaction.

C. There shall be a supervisor on the job site at all times while work is in progress.

1.11 QUALITY ASSURANCE

A. To the greatest degree possible, all products to be furnished for this project shall be manufactured by the roofing membrane manufacturer, to constitute a "system". Third party products are only acceptable where specifically accepted by the manufacturer for inclusion in the system warranty. Submit such approval on manufacturer's letterhead.

B. The manufacturer must have a minimum of 20 years experience in the manufacturing of vulcanized thermal set sheeting.

C. Unless otherwise noted in this specification, the roofing contractor must strictly comply with the manufacturer's current specifications and details.

D. The roofing system must be installed by an applicator authorized and trained by the manufacturer in compliance with shop drawings as approved by the manufacturer. The roofing applicator shall be thoroughly experienced and upon request be able to provide evidence of having at least five (5) years successful experience installing single-ply EPDM roofing systems and having installed at least one (1) roofing application or several similar systems of equal or greater size within one year.

E. Provide adequate number of experienced workmen regularly engaged in this type of work who are skilled in the application techniques of the materials specified. Provide at least one thoroughly trained and experienced superintendent on the job at all times roofing work is in progress.

F. There shall be no deviations made from this specification or the approved submittals without the prior written approval of the Architect. Any deviation from the manufacturer's installation procedures must be supported by a written certification on the manufacturer's letterhead and presented for the specifier's consideration.

G. Upon completion of the installation, the applicator shall arrange for an inspection to be made by a non-sales technical representative of the membrane manufacturer in order to determine whether or not corrective work will be required before the warranty will be issued. Notify the building owner seventy-two (72) hours prior to the manufacturer's final inspection.

1.12 JOB CONDITIONS

A. Material Safety Data Sheets (MSDS) must be on location at all times during the transportation, storage and application of materials.

B. When positioning membrane sheets, exercise care to locate all field splices away from low spots and out of drain sumps. All field splices should be shingled to prevent bucking of water.

C. When loading materials onto the roof, the roofer must comply with the requirements of the Architect to prevent overloading and possible disturbance to the building structure.

D. Proceed with roofing work only when weather conditions are in compliance with the manufacturer's recommended limitations, and when conditions will permit the work to proceed in accordance with the manufacturer's requirements and recommendations.

E. Proceed with work so new roofing materials are not subject to construction traffic. When necessary, new roof sections shall be protected and inspected upon completion for possible damage.

F. Provide protection, such as 3/4 inch thick plywood, for all roof areas exposed to traffic during construction. Plywood must be smooth and free of fasteners and splinters.

G. The surface on which the insulation or roofing membrane is to be applied shall be clean, smooth, dry, and free of projections or contaminants that would prevent proper application of or be incompatible with the new installation, such as fins, sharp edges, foreign materials, oil and grease.

H. New roofing shall be complete and weathertight at the end of the work day.

I. Contaminants such as grease, fats and oils shall not be allowed to come in direct contact with the roofing membrane.

1.13 WARRANTY

A. Roofing Contractor's Warranty:

1. The roofing subcontractor shall supply the Owner with a minimum one-year workmanship warranty. In the event any work related to the roofing, flashing, or metalwork is found to be defective within one year of substantial completion, the roofing contractor shall remove and replace such at no additional cost to the Owner. The roofing subcontractor's warranty obligation shall run directly to the building owner, and a copy the roofing signed warranty shall be sent to the roofing system's manufacturer.

B. Membrane Manufacturer's Warranty:

1. Provide manufacturer's 20 year Total System Warranty covering both labor and material with no dollar limitation.

(a.) Total system warranty shall include all roofing materials, related components and accessories including, but not limited to the substrate board, vapor retarder, insulation board, cover board, roofing membrane, membrane flashings, fasteners, adhesives, metal roof copings, metal roof edges and termination metals and roof drain assemblies. The manufacturer shall repair defects in materials and workmanship as promptly after observation as weather and site conditions permit.

2. The maximum wind speed coverage shall be peak gusts of **72** mph measured at 10 meters above ground level.

3. Pro-rated System Warranties shall not be accepted.

II PART 2 PRODUCTS

2.01 MANUFACTURERS

A. The products to be furnished shall be provided by the manufacturer of the roofing membrane, to comprise a "system" eligible for warranty as specified in Part 1. The basis of this specification is Elevate (formerly Firestone) "RubberGard" EPDM and its related line of products manufactured by Holcim Elevate Building Products, Nashville, TN. Equal systems by the following manufacturers will also be acceptable:

1. Carlisle “Sure-Seal”
2. Johns Manville “NR 60"
3. Approved equals.

B. Unless otherwise approved by the specifier and accepted by the membrane manufacturer, all products (including insulation, fasteners, fastening plates and edgings) must be **manufactured and supplied** by the roofing system manufacturer and covered by the warranty.

2.02 UNDERLAYMENTS

A. Recovery Board: ASTM C208, Type 2 Grade 2 wood fiberboard suitable for use as a roofing underlayment and meeting the following:

1. Meet FM4450/4470, UL 790
2. Thickness: one inch
3. Board Size: 4' x 8'

2.03 MEMBRANE

A. Furnish RubberGard 60 mil LSFR EPDM (Ethylene, Propylene, Diene Monomer) in the largest sheet possible.

1. The membrane shall conform to the minimum physical properties of ASTM D4637.
2. When a 10 foot wide membrane is to be used, the membrane shall be manufactured in a single panel with no factory splices to reduce splice intersections.
3. Membrane shall be non-reinforced.
4. Membrane shall be Fire Retardant.

2.04 ADHESIVES, CLEANERS AND SEALANTS

A. Low-rise insulation adhesive: for attaching insulation to non-nailable decks, two-component, LVOC, low-rise polyurethane foam adhesive formulated with a hydrofluoroolefin (HFO) propellant with a low Global Warming Potential (GWP) and to be Non-Ozone Depleting (ODP), providing a sustainable alternative to products made with hydrofluorocarbons (HFC).

B. Membrane Bonding Adhesive: Manufacturer’s LVOC high-strength, synthetic rubber adhesive used for bonding EPDM membranes to various surfaces.

C. Seam Tape: Manufacturer’s standard 6" wide by 100' long pressure-sensitive splice tape used for splicing adjoining sections of EPDM membrane. When covering existing seams, provide tape of the next largest width, to completely cover existing tape where present and bod the new tape to the existing roof.

1. Membranes with pre-applied seam tape are acceptable.

D. Primer: Manufacturer’s standard solvent-based primer used to prepare the surface of EPDM membrane for application of Splice Tape or Pressure-Sensitive products. Where permitted by manufacturer, primer can also be used in conjunction with Splicing Cement in lieu of Splice Cleaner.

E. Lap Sealant: Manufacturer's standard black, heavy-bodied material used to seal the exposed edges of a membrane splice or membrane/flashing edge. Color to match membrane.

F. Water Cut-Off Mastic: Manufacturer's standard one-component, low viscosity, self wetting, Butyl blend mastic used as a sealing agent between the EPDM membrane or Elastoform (uncured) Flashing and applicable substrates.

G. Pourable Sealer: Manufacturer's standard black, two-component, solvent-free, polyurethane based product used for tie-ins and as a sealant around hard-to-flash membrane penetrating objects such as clusters of pipes and for a daily seal when the completion of flashings and terminations cannot be completed by the end of each work day.

2.05 FASTENERS AND PLATES

A. Provide the membrane manufacturer's recommended fasteners required for attachment to meet warranty requirements.

B. Termination bar: Manufacturer's standard 1" x .040" x 10' long galvalume-coated steel fastening bar used with HD Fasteners for membrane securement into steel or wood decks.

1. Where termination bars are used at masonry or concrete materials, provide manufacturer's standard 1-1/4" long expansion anchor with a zinc plated steel drive pin.

C. Membrane transition strips: Manufacturer's standard 9" wide, nominal 45-mil thick clean, cured black reinforced EPDM membrane 6" wide Factory-Applied seam tape laminated along one edge.

2.06 METAL EDGING AND MEMBRANE TERMINATIONS

A. Metal Roof Edging and Fascia: Continuous metal edge member serving as termination of roof membrane and retainer for metal fascia; watertight with no exposed fasteners; mounted to roof edge nailer.

1. Wind Performance:

(a.) Membrane Pull-Off Resistance: 100 lbs/ft minimum, when tested in accordance with ANSI/SPRI ES-1 Test Method RE-1, current edition.
(b.) Fascia Pull-Off Resistance: At least the minimum required when tested in accordance with ANSI/SPRI ES-1 Test Method RE-2, current edition.

2. Description: Elevate "UNA-Edge" or approved equal meeting the following:

(a.) Fascia Face Height: 8" or as noted on Drawings.
(b.) Fascia Material and Finish: 24 gage, 0.063 inch aluminum with Kynar 500 finish in manufacturer's standard color; matching concealed joint splice plates; factory-installed protective plastic film.
(c.) Length: 144 inches.
(d.) Functional Characteristics: There are no spring clips or extruded components in the UNA-Edge Metal Edge System. This results in easy-to-make field miters for drip edge roofing details.

(e.) Anchor Bar Cleat: 22 gage, 0.036 inch (0.9 mm) G90 coated commercial type galvanized steel with pre-punched holes.
(f.) Fasteners: Factory-provided corrosion resistant fasteners, with drivers; no exposed fasteners permitted.
(g.) Aluminum Bar: Continuous 6063-T6 alloy aluminum extrusion with pre-punched slotted holes; miters welded; injection molded EPDM splices to allow thermal expansion.

2.07 OTHER MATERIALS

A. Metal flashing (other than edge flashing): minimum 0.024" mill aluminum.

B. Pipe flashing: molded EPDM boot-style flashing with pressure-sensitive adhesive flange. Provide stainless steel clamp ring and water cut-off mastic.

III PART 3 EXECUTION

3.01 EXAMINATION

A. Prior to the start of work, the roofer shall examine the project area and the surrounding site, to develop a logistical plan for the execution of the work. The following shall be reviewed and discussed with the Owner:

1. Location of dumpsters and chutes.
2. Method of preventing adhesive fumes from entering the building HVAC.
3. Locations of cranes, Lulls or other hoisting equipment, and location of stockpiled materials on roof.

B. Prior to the start of demolition, the roofer shall arrange an on-site conference with a field representative for the membrane manufacturer, to review any special details which may be required for issuance of the specified warranty. The roofer shall be prepared to perform any test cuts or exploratory work required by the manufacturer’s representative, and to patch the same.

3.02 COORDINATION

A. The roofer shall coordinate his operations with the Owner, relative to the continued use of the building by tenants as the work progresses.

3.03 DEMOLITION

A. Do not remove any more materials than can be replaced in the same day. Do not remove materials when the forecast is for rain or high winds. Should inclement weather arise at any time during the project, the roofer shall cease operations and secure the roof and any stored materials from damage by wind or rain.

B. Remove roofing systems and insulation taking care to protect and preserve the existing roof deck.

C. Remove all cants, rubber or metal flashings, drain strainers and other work as detailed.

D. Coordinate the disconnection/reconnection of rooftop equipment by licensed plumbers or electricians as required to install the new roofing system.

E. Remove roofing from vertical walls fully, including fasteners or adhesives.

F. Safely remove all demolished materials to dumpsters at grade, and legally dispose of materials, recycling where required by other sections of this specification.

3.04 GENERAL

A. Comply with the manufacturer's published instructions for the installation of the membrane roofing system including proper substrate preparation, jobsite considerations and weather restrictions.

B. Position sheets to accommodate contours of the roof deck and shingle splices to avoid bucking water.

3.05 UNDERLAYMENT PLACEMENT

A. Place new recovery board where membrane is to be installed and secure to the substrate with insulation adhesive at the roofing manufacturer's recommended coverage rate..

3.06 MEMBRANE PLACEMENT AND BONDING

A. Unroll and position membrane without stretching. Allow the membrane to relax for approximately 1/2 hour before bonding. Fold the sheet back onto itself so half the underside of the membrane is exposed.

B. Apply the Bonding Adhesive in accordance with the manufacturer's published instructions, to both the underside of the membrane and the substrate. Allow the adhesive to dry until it is tacky but will not string or stick to a dry finger touch.

1. Roll the coated membrane into the coated substrate while avoiding wrinkles. Brush down the bonded half of the membrane sheet with a soft bristle push broom to achieve maximum contact.
2. Fold back the unbonded half of the membrane sheet and repeat the bonding procedure.

C. Install adjoining membrane sheets in the same manner, overlapping edges approximately 4 inches. Do not apply bonding adhesive to the splice area.

3.07 MEMBRANE SPLICING

A. Splice and seal all membrane intersections using seam tape, following the manufacturer's requirements for the specified warranty.

B. Use primers and membrane cleaners prior to applying tape.

C. Roll the splice using positive pressure when using a 2" wide steel roller. Roll across the splice edge, not parallel to it.

D. At all field splice intersections, apply Lap Sealant along the edge of the membrane splice to cover the exposed tape in each direction from the splice intersection. Install "T" Joint Covers or a 6"

wide section (with rounded corners) of Pressure-Sensitive Flashing over the field splice intersection.

3.08 FLASHING

A. Install flashings, including laps, splices, joints, bonding, adhesion, and attachment, as required by membrane manufacturer's recommendations and details.

B. Metal Accessories: Install metal edgings in locations indicated on the drawings, with horizontal leg of edge member over membrane and flashing over metal onto membrane.

1. Follow roofing manufacturer's instructions.
2. Remove protective plastic surface film immediately before installation.
3. Install water block sealant under the membrane anchorage leg.
4. Flash with manufacturer's recommended flashing sheet unless otherwise indicated.
5. Where single application of flashing will not completely cover the metal flange, install additional piece of flashing to cover the metal edge.
6. If the roof edge includes a gravel stop and sealant is not applied between the laps in the metal edging, install an additional piece of self-adhesive flashing membrane over the metal lap to the top of the gravel stop; apply seam edge treatment at the intersections of the two flashing sections.
7. When the roof slope is greater than 1:12, apply seam edge treatment along the back edge of the flashing.

C. Flashing at Walls, Curbs, and Other Vertical and Sloped Surfaces: Install weathertight flashing at all walls, curbs, parapets, and other vertical and sloped surfaces that the roofing membrane abuts to; extend flashing at least 8 inches high above membrane surface.

1. Use the longest practical flashing pieces.
2. Evaluate the substrate and overlay and adjust installation procedure in accordance with membrane manufacturer's recommendations.
3. Complete the splice between flashing and the main roof sheet with specified splice adhesive before adhering flashing to the vertical surface.
4. Provide termination directly to the vertical substrate as shown on roof drawings. Wall and curb flashing shall be cured EPDM membrane. Continue the deck membrane as wall flashing where practicable.

D. Follow manufacturer’s typical flashing procedures for all wall, curb, and penetration flashing including metal edging and roof drain applications.

3.09 DAILY SEAL

A. If the reroofing cannot be completed in one day, a daily seal must be performed to temporarily close the membrane to prevent water infiltration.

B. Complete an acceptable membrane seal in accordance with the manufacturer’s requirements.

3.10 CLEAN UP

A. Perform daily clean-up to collect all wrappings, empty containers, paper, and other debris from the project site. Upon completion, all debris must be disposed of in a legally acceptable manner.

B. Prior to the manufacturer's inspection for warranty, the applicator must perform a pre-inspection to review all work and to verify all flashing has been completed as well as the application of all caulking.

END OF SECTION

SECTION 079000 CAULKING, SEALING AND JOINT FILLERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections apply to the work of this section

1.2 DESCRIPTION OF WORK

A. The extent of sealant and caulking work is indicated on the Drawings or specified herein.

1. Provide two component polyurethane non-sag sealant at vertical and horizontal joints.
2. Provide two component polyurethane self-leveling sealant at joints subject to traffic conditions.

1.3 QUALITY ASSURANCE

A. Obtain elastomeric materials from only manufacturers who will send a qualified technical representative to project site, for the purpose of advising the installer of proper procedures and precautions for the use of the materials.

1.4 SUBMITTALS

A. Manufacturer's Data: Submit manufacturer's specifications, recommendations and installation instructions for sealant, caulking compound and associated miscellaneous material required. Include manufacturer's published data, or letter of certification, or certified test laboratory report indicating that each material complies with the requirements and is intended generally for the applications shown.

B. Samples: Submit color samples of caulking from which the Architect will select color.

1.5 JOB CONDITIONS

A. Examine all surfaces to receive work of this Section and report to the Architect any condition which is not acceptable. Commencement of work on any continuous run constitutes acceptance of conditions and places the responsibility of a sound installation on this section.

B. Weather Conditions: Do not proceed with installation of sealants under adverse weather conditions, or when temperatures are below or above manufacturer's recommended limitations for installation. Proceed with the work only when forecasted weather conditions are favorable for proper cure and development of high early bond strength. Wherever joint width is affected by ambient temperature variations, install elastomeric sealants only when temperatures are in

the lower third of manufacturer's recommended installation temperature range, so that sealant will not be subjected to excessive elongation and bond stress at subsequent low temperatures. Coordinate time schedule to avoid delay of project.

1.6 DELIVERY AND STORAGE

A. Materials shall be delivered and stored in original, unopened manufacturer's containers with brand marked clearly thereon. Materials shall be stored in a dry location, protected from adverse conditions.

1.7 SPECIAL PROJECT WARRANTY

A. Execute and submit a written warranty signed by the Contractor that the joints sealants will remain free of deterioration, bond failure and staining resulting from defective materials or workmanship for a period of five years from the date of acceptance by the Owner.

B. Should defects in materials or workmanship be discovered within the warranty period, make satisfactory repairs thereto promptly without additional cost to the Owner.

PART 2 - PRODUCTS

2.1 CAULKING/SEALANT

A. The joint sealant to be used for control/construction joints shall be two component polyurethane sealants of the chemically curing type containing no asphalt, coal tar, or plasticizers. The sealant shall be used with a compatible primer specified by the manufacturer. Approved products for use are:

1. MasterSeal SL2 (Sonolastic SL2) as manufactured by BASF Building Systems (www.buildingsystems.basf.com).
2. Vulkem 245/255 or THC-900 as manufactured by Tremco (www.tremcosealants.com).
3. Iso-Flex 880GB Sealant as manufactured by LymTal International, Inc. (www.lymtal.com).
4. Sikaflex 2C-SL as manufactured by Sika Corporation (www.sikausa.com).

B. The sealant to be used shall meet or exceed the requirements of Interim Federal Specification TT-S0027-E, Sealants Class A, Type 1 and 2. The sealant shall not de-bond or fail while elongated 25 percent in a water immersion test, according to Federal Specification TT-S-0027-E. When tested according to Paragraph 4.3.5. of Federal Specification TT-S-0027-E, weight loss shall not be greater than 5 percent. Shore A hardness under standard conditions shall be 25-30.

C. The cove/wall sealant to be used shall be a non-sag, two component polyurethane sealants of the chemically curing type containing no asphalt, coal tar, or

plasticizers. The cove joint sealant shall comply with Federal Specification TT-S-00227E, Type II, Class A, Corporation of Consultants CRD-C-506-72; ASTM C-920-79, Type M, Grade NS, Class 25. Approved Cove Sealants are as follows:

1. " MasterSeal NP2 (Sonolastic NP2)" as manufactured by BASF Building Systems (www.buildingsystems.basf.com)
2. "THC-901" as manufactured by Tremco (www.tremcosealants.com)
3. "Iso-Flex 881 NS Sealant" as manufactured by LymTal International, Inc. (www.lymtal.com)
4. "Sikaflex-2C-NS," as manufactured by Sika Corporation (www.sikausa.com)

2.2 PRIMER AND FILLERS

A. Joint Cleaner: Provide the type of joint cleaning compound recommended by the sealant or caulking compound manufacturer, for the joint surfaces to be cleaned.

B. Joint Primer/Sealer: Provide the type joint primer/sealer recommended by the sealant manufacturer, for the joint surfaces to be primed or sealed.

C. Bond Breaker Tape: Polyethylene tape or other plastic tape as recommended by the sealant manufacturer, to be applied to sealant-contact surfaces where bond to the substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape wherever applicable.

D. Sealant Backer Rod: Compressible rod stock polyethylene foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam or other flexible, permanent, durable non-absorptive material as recommended for compatibility with sealant by the sealant manufacturer. Provide size and shape of rod which will control the joint depth for sealant placement, break bond of sealant at bottom of joint, form optimum shape of sealant bead on back side, and provide a highly compressible backer to minimize the possibility of sealant extrusion when joint is compressed.

PART 3 – EXECUTION

3.1 TYPICAL SURFACE PREPARATION

A. The Contractor shall either grind the surface of all cracks and construction joints designated for repair with sealant to the shape of 1/2" x 1/2" v-groove, or sawcut a square ½" x ½" groove, grind sharp corner of groove and apply bond breaker to bottom horizontal surface. Edges of cracks or joints to be sealed shall be of sound concrete. Prior to installing sealant, surfaces shall be cleaned of foreign materials and debris, V-groove ground and primed.

3.2 CAULKING/SEALANT APPLICATION

A. Joint Surface Preparation: Clean joint surfaces immediately before installation of sealant or caulking compound. Remove dirt, insecure coatings, moisture and other substances which would interfere with bond of sealant or caulking compound.

1. For elastomeric sealants, do not proceed with installation of sealant over joint surfaces which have been painted, lacquered, waterproofed or treated with water repellent or other treatment or coating unless a laboratory test for durability (adhesion), in compliance with Paragraph 4.3.9 of FS TT-S-00227E-70 has successfully demonstrated that sealant bond is not impaired by the coating or treatment. Submit lab test in writing.
2. Etch concrete and masonry joint surfaces to remove excess alkalinity, unless sealant manufacturer's printed instructions indicate that alkalinity does not interfere with sealant bond and performance. Submit lab test in writing.

B. Installation: Comply with sealant manufacturer's printed instructions except where more stringent requirements are shown or specified and except where manufacturer's technical representative directs otherwise.

1. Prime or seal the joint surfaces wherever shown or recommended by the sealant manufacturer. Do not allow primer/sealer to spill or migrate onto adjoining surfaces.
2. Install sealant backer rod for liquid elastomeric sealants, except where recommended to be omitted by sealant manufacturer for the application shown.
3. Install bond breaker tape wherever required by manufacturer's recommendations to ensure that elastomeric sealants will perform properly.
4. Employ only proven installation techniques, which will ensure that sealants will be deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of the joint bond surfaces equally on opposite sides. Except as otherwise indicated, fill sealant rabbet to a slightly concave surface, slightly below adjoining surfaces. Where horizontal joints are between a horizontal surface and a vertical surface, fill joint to form a slight cove, so that joint will not trap moisture and dirt.
5. Install sealants to depths as recommended by the sealant manufacturer but within the following general limitations, measured at the center (thin) section of the bead.
6. Spillage: Do not allow sealants or compounds to overflow or spill onto adjoining surfaces. Use masking tape or other precautionary devices to prevent staining of adjoining surfaces, by either the primer/sealer or the sealant/caulking compound.
7. Remove excess and spillage of compounds promptly as the work progresses. Clean the adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage, without damage to the adjoining surfaces or finishes.
8. Top off self-leveling sealant as necessary if there is any settlement.

C. Cure and Protection:

1. Cure sealants and caulking compounds in compliance with manufacturer's instructions and recommendations to obtain high early bond strength, internal cohesive strength and surface durability.
2. Provide all procedures required for the protection of sealants and caulking compounds during the construction period, so that they will be without deterioration or damage (other than normal wear and weathering) at the time of acceptance.

3.3 JOINT FILLERS

A. Set units at proper depth or position in the joint to coordinate with other work, including the installation of bond breakers, backer rods and sealants. Do not leave voids or gaps between the ends of joint filler units.

END OF SECTION 079000

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SECTION 079100 EXPANSION JOINT SEALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Section 079000 – Caulking, Sealing and Joint Fillers

1.2 SCOPE OF WORK

A. Furnish labor, materials, equipment and supervision to install watertight, traffic bearing expansion joint seals in accordance with these specifications and as shown on the drawings.

1.3 QUALITY ASSURANCE

A. The manufacturer and approved applicator shall provide a 5 year guarantee that the joint seal will not leak or fail. Any type of failure of the new joint seal which occurs within the specified warranty period shall be repaired by the Contractor at no cost to the Owner.

B. Consult the Manufacturer's representative and establish the minimum provisions required to ensure satisfactory work. A licensed applicator with a minimum of 5 years experience on similar joints shall install the specified joint seal.

1.4 SUBMITTALS BY THE CONTRACTOR

A. The Contractor shall submit shop drawings showing all the expansion joint details required for this particular project for approval by the Consultant in addition to Manufacturer's literature with an applicable portions deleted.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

A. All materials shall be delivered on the job and stored in a place protected from damage, moisture and exposure to the elements in exact accordance with manufacturer's instructions.

1.6 JOB CONDITIONS

A. Weather Conditions: Do not proceed with installation of expansion joints and sealants under adverse weather conditions, or when temperatures are below or above manufacturer's recommended limitations for installation. Proceed with the work only when forecasted weather conditions are favorable for proper cure and strength development of the associated joint materials.

PART 2 - PRODUCTS

2.1 MATERIALS

A. The expansion joint seal system shall be a complete system of compatible materials designed by the manufacturer to produce a waterproof, traffic bearing expansion joint seal.

B. Expansion joint at supported floors:

1. The expansion joint seal system shall be a complete system of compatible materials designed by the manufacturer to produce a waterproof, traffic-bearing expansion joint seal. The system shall also meet or exceed any fire rating requirements set forth by the local building code requirements.

2. The gland elements shall be a continuous, factory extruded unit for the entire straight run length of the joint. Changes in direction or elevation shall be accomplished by factory molded elbows, tees, crosses and the like. The seal shall be turned up a minimum of 6 inches (vertically) unless otherwise shown on plans. The seal element shall not be mitered/jointed unless approved by the Consultant in writing and shall meet the following performance criteria.

Tensile Strength	ASTM D412	1,500 psi
Elongation at Break	ASTM D412	175 % (Min.)
Hardness, Type A durometer	ASTM D2240	64 ± 5

3. The premolded elements shall be a continuous, factory molded unit for the entire straight run length of the joint. Changes in direction or elevation shall be accomplished by factory molded elbows, tees, crosses and the like. The seal shall be turned up a minimum of 6 inches (vertically) unless otherwise shown on plans. The seal element shall be mitered/jointed at all changes in direction and shall meet the following performance criteria.

Tensile Strength	ASTM D412	250 psi
Elongation at Break	ASTM D412	500 % (min)
Hardness, Type A durometer	ASTM D2240	30+/-5

4. Expansion joint systems approved for use in one or more applications are provided in the master list below. Due to variations in specific details of the locations, expected movement, expected traffic exposure, availability, ease of installation and existing blockout geometry, all systems are not suitable for one particular project. The Contractor shall reference the specific expansion joint detail on the specific project drawings and list of approved products shown on the drawings, including gland size, etc. for the respective condition.

5. Approved Products

   a. "Wabocrete/Membrane 201 system," model as applicable, manufactured by Watson Bowman Acme, (www.wbacorp.com).

   b. "Emseal Thermaflex," model as applicable, manufactured by Emseal Joint Systems, Ltd. (www.emseal.com).

   Or equal

PART 3 - EXECUTION

3.1 INSTALLATION

A. Preparatory Work

1. Expansion joint throat to be cleared of all existing sealants, joint fillers and other materials to a depth required for installation of new seal.

2. Vertical sides of expansion joint throat shall be ground clean of all contaminants and impurities immediately prior to the system installation to assure proper adhesion.

3. It is recommended that adjacent deck surfaces be taped off and protected to assure a clean, neat professional installation.

B. Installation

1. The entire installation shall be made in strict accordance with the manufacturer's written instruction.

2. Foam seal to be installed into manufacturer's standard field-applied epoxy adhesive. The seal is to be installed slightly recessed from the surface such that when the field-applied injection band of silicone is installed between the substrates and the foam-and-silicone-bellows, the system will be essentially flush with the substrate surface.

3. Follow standard manufacturer's recommendation for installation of the material, taking into account joint dimensions, joint width and ambient temperature conditions.

3.2 TESTING

All new expansion joint seals shall be tested. Any leaking observed shall be rectified by the Contractor and the joint shall be re-tested until no leakage is observed. It is the

responsibility of the Contractor to absolutely make certain that the joints are totally waterproofed.

END OF SECTION 079100

SECTION 099653 - ELASTOMERIC COATINGS

I. PART 1 - GENERAL

1.01 GENERAL

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

1.02 DESCRIPTION OF WORK

A. **Work included:** Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. Surface preparation of all surfaces to receive coatings specified herein.
2. Coating roof-side face of concrete elevator shaft walls

B. **Alternates:** None.

C. **Items to Be Installed Only:** Install the following items as furnished by the designated Sections:

1. None. All items to be installed by this trade, shall be furnished by this trade.

D. **Items to Be Furnished Only:** Furnish the following items for installation by the designated Sections:

1. None.

E. **Related Work Specified Elsewhere:** The following items are not included in the Section, and will be performed under the designated Section:

1. Section 075000 - MEMBRANE ROOFING for the removal of roofing from substrates to be coated under this section.

1.03 SUBMITTALS

A. Submit under provisions of Section 013300 - Submittals

.

B. Product Data: For each paint system indicated, including:

1. Product characteristics.
2. Surface preparation instructions and recommendations.
3. Primer requirements and finish specification.
4. Storage and handling requirements and recommendations.
5. Application methods.
6. Cautions for storage, handling and installation.

C. Selection Samples: Submit a complete set of color chips that represent the full range of manufacturer's products, colors and sheens available.

D. Verification Samples: For each finish product specified, submit samples that represent actual product, color, and sheen.

E. Only submit complying products based on project requirements (i.e. LEED). One must also comply with the regulations regarding VOCs (CARB, OTC, SCAQMD, LADCO). To ensure compliance with district regulations and other rules, businesses that perform coating activities should contact the local district in each area where the coating will be used.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.

B. Paint exposed surfaces. If a color of finish, or a surface is not specifically mentioned, Architect will select from standard products, colors and sheens available.

C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels unless indicated.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver manufacturer's unopened containers to the work site. Packaging shall bear the manufacturer's name, label, and the following list of information.

1. Product name, and type (description).
2. Application and use instructions.
3. Surface preparation.
4. VOC content.
5. Environmental handling.
6. Batch date.
7. Color number.

B. Storage: Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1. Store materials in an area that is within the acceptable temperature range, per manufacturer's instructions. Protect from freezing.

C. Handling: Maintain a clean, dry storage area, to prevent contamination or damage to the coatings.

1.06 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.07 EXTRA MATERIALS

A. Furnish extra materials leftover after the work is complete, for the Owner's future use. Package with protective covering for storage and identify with labels describing contents.

II. PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturer: Sherwin-Williams, which is located at: 101 Prospect Ave.; Cleveland, OH 44115; Mark T. Weiner,Csi-IIDA Office 401-245-5176 Email Heather.R.Bourgeois@sherwin.com

B. Equal products by other manufacturers meeting the performance criteria of the basis of specification will be acceptable.

2.02 MATERIALS - GENERAL

A. Unless otherwise indicated, provide factory-mixed coatings. When required, mix coatings to correct consistency in accordance with manufacturer's instructions before application. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer's product instructions.

B. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color. Or follow manufactures product instructions for optimal color conformance.

C. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.

D. Coating Application Accessories: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required, per manufacturer's specifications.

E. Color: To be selected by Owner from manufacturer's standard colors.

2.03 ELASTOMERIC COATINGS

A. Elastomeric System, flat:

1. 1st Coat: S-W Loxon Acrylic Conditioner, guide coat white LX03W0100 (200-300 sf / gallon).

2. 2nd Coat: S-W Conflex Sherlastic Flat, CF16W0051 Series (22.0 - 30.0 mils wet, 8.6 - 11.7 mils.

3. 3rd Coat: S-W Conflex Sherlastic Flat, CF16W0051 Series (22.0 - 30.0 mils wet, 8.6 - 11.7 mils dry).

4. Color: selected by Owner to approximately match the existing concrete.

III. PART 3 - EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared; notify Architect of unsatisfactory conditions before proceeding. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

B. Proceed with work only after conditions have been corrected and approved by all parties, otherwise application of coatings will be considered as an acceptance of surface conditions.

3.02 SURFACE PREPARATION

A. Removal of the roofing, any fasteners and adhesive will be performed by the Roofing Contractor. Coating applicator will perform the final wall prep to remove any remaining vapor barrier conditions which would prevent the migration of moisture vapor through the wall and deliver a substrate suitable to receive the new coating.

1. Anticipate pressure washing or mechanically abrading walls.

2. Fill any voids left by fastener removal or cracks wider than what the coating can bridge, with non-shrink grout, hydraulic cement or repair mortar to deliver an intact substrate.

3. Coordinate with Roofing Contractor to ensure that preparation methods, cleaners, etc. do not damage the new roofing

B. General: Surfaces shall be dry and in sound condition. Remove oil, dust, dirt, loose rust, peeling paint or other contamination to ensure good adhesion.

C. No exterior coating should be done immediately after a rain, during foggy weather, when rain is predicted, or when the temperature is below 50 degrees F (10 degrees C), unless products are designed specifically for these conditions. On large expanses of metal siding, the air, surface and material temperatures must be 50 degrees F (10 degrees F) or higher to use low temperature products.

3.03 INSTALLATION

A. Apply all coatings and materials with the manufacturer's specifications in mind. Mix and thin coatings according to manufacturer's recommendations.

B. Do not apply to wet or damp surfaces. Wait at least 30 days before applying to new concrete or masonry. Or follow manufacturer's procedures to apply appropriate coatings prior to 30 days. Test new concrete for moisture content. Wait until wood is fully dry after rain or morning fog or dew.

C. Apply coatings using methods recommended by manufacturer.

D. Uniformly apply coatings without runs, drips, or sags, without brush marks, and with consistent sheen.

E. Apply coatings at spreading rate required to achieve the manufacturers recommended dry film thickness.

F. Regardless of number of coats specified, apply as many coats as necessary for complete hide, and uniform appearance.

G. Inspection: The coated surface must be inspected and approved by the Architect just prior to the application of each coat.

3.04 PROTECTION

A. Protect finished coatings from damage until completion of project.

B. Touch-up damaged coatings after substantial completion, following manufacturer's recommendation for touch up or repair of damaged coatings. Repair any defects that will hinder the performance of the coatings.

END OF SECTION

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SECTION 210001 – FIRE PROTECTION

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Time, Manner and Requirements for Submitting Sub-Bids:

1. Each sub-bid submitted for work required under this Section shall be on forms furnished in this specification and in accordance with the provisions of M.G.L. c.149 SS44A-J. Sub-bidders must be DCAM Certified in the listed trade and shall include a Current DCAM Sub-bidder Certificate of Eligibility and signed DCAM Sub-bidder's Update Statement with their bid.

2. Sub-Bids submitted shall be accompanied by BID BOND, CERTIFIED CHECK, or TREASURER'S CHECK, or CASHIERS CHECK, issued by a responsible bank or trust company, payable to the City of Worcester, in the amount of five percent (5%) of the bid. A sub-bid accompanied by any other form of bid deposit may be rejected.

C. Sub Sub-Bid Requirements: None required under this Section.

D. Reference Drawings: The Work of this Filed Sub Bid is shown on the following Contract Drawings:

NUMBER	SHEET NAME
FX-001	Fire Protection Legend and Notes
FXD-101	Ground Floor Fire Protection Demolition Plan
FX-101	Ground Floor Fire Protection New Work Plan

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. All Work of Section 21 05 00 – FIRE PROTECTION

B. Alternates: Not Applicable.

END OF SECTION

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SECTION 21 05 00 - FIRE PROTECTION

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 00 Specification sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies automatic sprinkler systems and standpipe and hose systems for buildings and structures. Materials and equipment specified in this Section include:

1. Pipe, fittings, valves, and specialties.

B. Fees & Permits: The contractor shall submit plans to the local authorities (state and local) for review and pay for all fees associated with the review.

C. Sprinklers, cabinets and accessories.

D. Products furnished but not installed include sprinkler head cabinet with spare sprinkler heads. Furnish to the Owner's maintenance personnel.

1.3 DEFINITIONS

A. Pipe sizes used in this Specification are Nominal Pipe Size (NPS).

B. Other definitions for fire protection systems are listed in NFPA Standards 13, 14, and 24.

C. Working Plans as used in this Section means those documents (including drawings and calculations) prepared pursuant to the requirements contained in NFPA 13 and the owner’s insurance company for obtaining approval of the authority having jurisdiction.

1.4 SUBMITTALS

A. Product Data for each type sprinkler head, valve, piping specialty, fire protection specialty, fire department connection and cabinet specified.

B. Shop Drawings prepared in accordance with NFPA 13 and owner’s insurance company identified as "Working Plans," including hydraulic and seismic restraint calculations where applicable, and which have been approved by the authority having jurisdiction.

C. Maintenance Data for each type sprinkler head, valve, piping specialty, fire protection specialty, fire department connection and cabinet specified, for inclusion in operating and maintenance manual specified in Division 00 and Division-23 Section "BASIC MECHANICAL REQUIREMENTS."

D. Welders' qualification certificates.

E. Installer qualifications (refer to Quality Assurance).

F. Test Reports and Certificates include "Contractor's Material & Test Certificate for Aboveground Piping" and "Contractor's Material & Test Certificate for Underground Piping" as described in NFPA 13.

G. Substitutions: Refer to Division 23 section, “BASIC MECHANICAL REQUIREMENTS”, for manufacturer substitutions not listed herein.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Installation and alterations of fire protection piping, equipment, specialties, and accessories, and repair and servicing of equipment shall be performed only by a qualified installer. The term “qualified” is defined as being experienced in such work (experienced being a minimum of five previous projects similar in size and scope to this project), familiar with all precautions required, and has successfully completed the necessary examinations and courses required by the authorities having jurisdiction. Refer to Division-00 Section: "Definitions and Standards" for definitions for "Installers."

B. Regulatory Requirements: Comply with the requirements of the following codes:

1. NFPA 13 - Standard for the Installation of Sprinkler Systems.

2. NFPA 14 - Standard for the Installation of Standpipe and Hose Systems.

3. NFPA 1961 - Standard for Fire Hose.

4. NFPA 1963 - Screw Threads and Gaskets for Fire Hose Connections.
ADD OTHER APPLICABLE NFPA STANDARDS THAT MAY BE APPLICABLE, I.E. 231C RACK STORAGE)

5. UL Compliance: Fire protection system materials and components shall be Underwriter's Laboratories listed and labeled.

6. Owner’s insurance company: Fire protection system materials and components shall be approved for the application anticipated.

7. Project designer must be at a minimum level 3 NICET (National Institute for Certification in Engineering Technologies) certified or a Professional Engineer in Fire Protection Engineering.

1.6 SEQUENCING AND SCHEDULING

A. Schedule rough-in installations with installations of other building components.

1.7 EXTRA MATERIALS

A. Valve Wrenches: Furnish to Owner valve wrenches for each type of sprinkler head installed, quantity as required by NFPA 13.

B. Sprinkler Heads and Cabinets: Furnish extra sprinkler heads of each style included in the project. Furnish each style of sprinkler head in a project cabinet including special wrenches as required by NFPA 13.

1.8 DESIGN CRITERIA

A. The building Owner is currently insured by the city of Worcester. References to 'the Owner's insurance company' in this specification refers to the aforementioned.

1. The building is classified as a ordinary hazard group II with a density factor of 0.20 gpm/1500 square feet.

2. Certain spaces as defined on the Fire Protection drawings such as storage rooms, mechanical and electrical rooms etc are classified as ordinary hazard with a density factor of 0.15 gpm/1500 square feet.

1.9 SYSTEM DESCRIPTION

A. The proposed scope of work to be performed for the garage includes modifying the sprinkler system in the elevator lobby on the first floor from a wet pipe system to a dry pipe system. The fire protection (sprinkler) system is comprised of two systems; one being a wet pipe system serving the heated ground for future retails spaces as well as some support spaces (i.e. office, elevator machine room, lobby, etc.) and the other being a dry-pipe system serving two standpipe risers serving the parking areas. The dry pipe system is not supported by a dry valve release off of the wet system but rather a dry system that is supplied solely by fire department pump truck connections.

B. Fire protection system is a "Wet-Pipe" system employing automatic sprinklers attached to a piping system containing water and connected to a water supply so that water discharges immediately from sprinklers opened by fire.

C. Fire protection system is a "Dry-Pipe" system employing automatic sprinklers attached to a piping system containing air under pressure, the release of which (as from the opening of a sprinkler) permits the water pressure to open a valve known as a dry-pipe valve. The water then flows into the piping system and out the opened sprinkler.

D. Fire protection system is a "Class III, Standpipe and Hose" system which is an arrangement of piping, valves, hose connections, and allied equipment.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide fire protection system products from one of the following:

1. Gate Valves:
   a. Fairbanks
   b. Jenkins
   c. Kennedy Valve, Div of ITT Grinnell Valve Co., Inc.
   d. Stockham

2. Swing Check Valves:
   a. Fairbanks
   b. Jenkins
   c. Kennedy Valve, Div of ITT Grinnell Valve Co., Inc.
   d. Stockham

3. Grooved Mechanical Couplings:
   a. Stockham
   b. Victaulic Company of America

4. Water Flow Indicators:
   a. Reliable Automatic Sprinkler Co., Inc.
   b. Star Sprinkler Corp.
   c. Victaulic Company of America
   d. Viking Corp.

5. Water-Motor Gongs:
   a. Reliable Automatic Sprinkler Co., Inc.
   b. Star Sprinkler Corp.
   c. Viking Corp.

6. Air-Pressure Maintenance Device, Dry-Pipe System:
   a. Reliable Automatic Sprinkler Co., Inc.
   b. Star Sprinkler Corp.
   c. Viking Corp.

7. Dry-Pipe Valves:
   a. Reliable Automatic Sprinkler Co., Inc.
   b. Star Sprinkler Corp.
   c. Viking Corp.

8. Detector Check Valves:
   a. Ames Company, Inc.

b. Kennedy Valve, Div of ITT Grinnell Valve Co., Inc.
c. Victaulic Company of America

9. Alarm Check Valve:
   a. Central Sprinkler Corp.
   b. Reliable Automatic Sprinkler Co., Inc.
   c. Star Sprinkler Corp.
   d. Viking Corp.

10. Hose Outlet Valves:
    a. Guardian Fire Equipment, Inc.
    b. United Brass
    c. Potter Roemer
    d. Croker

11. Fire Department Connection Valve:
    a. Guardian Fire Equipment, Inc.
    b. United Brass
    c. Potter Roemer
    d. Croker

12. Sprinkler Heads:
    a. Automatic Sprinkler Corp of America.
    b. Central Sprinkler Corp. (a Tyco Company)
    c. Firematic Sprinkler Devices, Inc.
    d. Grinnell Corporation (a Tyco Company)
    e. Guardian Automatic Sprinkler Co., Inc.
    f. Reliable Automatic Sprinkler Co., Inc.
    g. Star Sprinkler Corp. (a Tyco Company)
    h. Viking Corp.

13. Fire Hose, Valve, and Extinguisher Cabinets:
    a. J. L. Industries
    b. Larsen's Mfg. Co.
    c. Johnson-Lee, Division of W.F. Lee Corp.
    d. Muckle Manufacturing, Division of Technico, Inc.
    e. Watrous, Inc.

2.2 PIPE AND FITTING MATERIALS

A. Pipe & Fitting Schedule: The following schedule indicates the pipe and fittings to be used on this project, except where specific requirements are listed elsewhere in this section:

ITEM	SIZE	ASTM SPEC NO.	MATERIAL WEIGHT & TYPE
Pipe	≤2"	A53, grade B, type S or E	Schedule 40, ANSI B36.10
	>2"	A53, grade B, type S or E	Schedule 10, ANSI B36.10
Fittings	≤2"	A126, class B cast iron	Standard, threaded, B16.4
	All Sizes	A536, ductile Iron	synthetic rubber gaskets
Flanges	≤2"	A105, forged carbon steel	class 150, RF, threaded, ANSI B16.5
	>2"	A105, forged carbon steel	class 150, RF, weld neck or slip on, ANSI B16.5
Bolts		A193, grade B7 carbon steel	Hex head (ANSI B18.2.1), B1.1, class 2A course thread
Nuts		A194, Grade 2H, Carbon steel	Heavy hex (ANSI B18.2.2), B1.1,class 2B course thread
Gaskets	Per flange standard	A304, stainless steel, Grafoil filled, spiral wound	class 150, RF, ring style, ANSI B16.20

B. Provide galvanized pipe and fittings where required by NFPA of Owner's insurance company.

C. Grooved Mechanical Couplings: Consist of ductile or malleable iron housing, a synthetic rubber gasket of a central cavity pressure-responsive design; with nuts, bolts, locking pin, locking toggle, or lugs to secure roll-grooved pipe and fittings. Grooved mechanical couplings including gaskets used on dry-pipe systems shall be listed for dry-pipe service.

D. For water mist systems, piping downstream of the strainer shall be threaded regular wall seam-less copper pipe per ASTM B42 or red brass pipe per ASTM B43, with fittings per ANSI B16.15, class 125.

2.3 GENERAL DUTY VALVES

A. Gate Valves - 2 Inch and Smaller: body and bonnet of cast bronze, 175 pound cold water working pressure - non-shock, threaded ends, solid wedge, outside screw and yoke, rising stem, screw-in bonnet, and malleable iron handwheel.

B. Gate Valves - 2-1/2 Inch and Larger: iron body; bronze mounted, 175 pound cold water working pressure - non-shock. Valves shall have solid taper wedge; outside screw and yoke, rising stem; flanged bonnet, with body and bonnet conforming to ASTM A 126 Class B; replaceable bronze wedge facing rings; flanged ends; and a packing assembly consisting of a cast iron gland flange, brass gland, packing, bonnet, and bronze bonnet bushing.

C. Butterfly Valves: Class 300, ductile iron body and disk conforming to ASTM A-536, EPDM coated disk, hand wheel for slow acting applications.

D. Swing Check Valves: MSS SP-71; Class 175, cast iron body and bolted cap conforming to ASTM A 126, Class B; horizontal swing, with a bronze disc or cast iron disc with bronze disc ring, and flanged ends. Valve shall be capable of being refitted while the valve remains in the line.

E. Reduced Pressure Zone (RPZ) Backflow Preventer: Finished with seated gate valve shutoffs, fused epoxy coated cast iron body, captured spring assemblies, replaceable bronze seat, suitable up to 175 psi, Watts Series 909.

2.4 SPECIALTY VALVES AND MANIFOLDS

A. Dry-Pipe Valves: Differential type, at least 175 psig working pressure, and have cast iron, inlet and outlet to suit project piping system, bronze seat with "O" ring seals, single hinge pin and latch design. Provide trim sets for air supply, drain, priming level, alarm connections, ball drip valves, pressure gages, priming chamber attachment, and fill line attachment.

B. Air-Pressure Maintenance Device, Dry-Pipe System: An automatic device to maintain the correct air pressure in a dry-pipe system or deluge system. System shall have shut-off valves to permit servicing without shutting down the sprinkler system, bypass valve for quick system filling, pressure regulator or switch to maintain system pressure, strainer; pressure ratings 14 to 60 psig adjustable range, and 175 psig maximum inlet pressure. Electrical ratings shall match compressor ratings.

C. Detector Check Valves: Galvanized cast iron body, with a bolted cover with air bleed device for access to internal parts; 175 psig working pressure. One piece bronze disc with bronze bushings, pivot and replaceable seat. Provide threaded bypass taps in the inlet and outlet for bypass meter connection. Valve shall be set to allow minimal water flow through the bypass meter; when major water flow is required, the water pressure will fully open the clapper.

D. Flow Switch Riser Manifold: Factory assembled unit consisting of flow switch, pressure gauge, sight glass on test & drain connection, and relief valve where required for grid systems. Assembly shall be U. L. tested and listed, and painted red with white identification markings indicating flow direction and tapping uses.

2.5 AUTOMATIC SPRINKLERS

A. Sprinkler Heads: Glass bulb or fusible link type, and style as indicated or required by the application. Unless otherwise indicated, provide heads with nominal ½” discharge orifice, for "Ordinary" temperature range.

B. Sprinkler Head Finishes: Provide heads with the following finishes:

1. Upright, Pendent, and Sidewall Styles: Match existing in finish spaces, exposed

to view; rough bronze finish for heads in unfinished spaces and not exposed to view. Heads shall be wax-coated where installed exposed to acids, chemicals, or other corrosive fumes.

C. Sprinkler Head Cabinet and Wrench: Finished steel cabinet, suitable for wall mounting, with hinged cover and space for 6 spare sprinkler heads plus sprinkler head wrench. Provide a separate cabinet for each style sprinkler head on the project.

2.6 FIRE DEPARTMENT CONNECTIONS

A. Wall Type Siamese Connections: Polished cast brass, flush wall type, with wall escutcheon and two-way connections. Connection sizes shall be 4 inch outlet and two 2-1/2 inch female inlets, having NH standard threads, for the connection size indicated, as specified in NFPA 1963. Each inlet shall have a clapper valve, and plug and chain. Unit shall have wall escutcheon of cast brass, finish to match connections, with words "STANDPIPE - FIRE DEPT CONNECTION" or "AUTO SPKR - FIRE DEPT CONNECTION," or "AUTO SPKR & STANDPIPE - FIRE DEPT CONNECTION" in raised letters.

B. Sidewalk Siamese Connection: Chrome plated cast brass, angle body, two way, siamese connection. Connection sizes shall be 4 inch outlet and two 2-1/2 inch female inlets, having NH standard threads, for the connection size indicated, as specified in NFPA 1963. Each inlet shall have a clapper valve, and plug and chain. Provide 18 inch high chrome plated brass sleeve and chrome plated brass sidewalk plate, with words "STANDPIPE - FIRE DEPT CONNECTION" or "AUTO SPKR - FIRE DEPT CONNECTION," or "AUTO SPKR & STANDPIPE -FIRE DEPT CONNECTION" in raised letters.

2.7 ALARM DEVICES

A. General: Types and sizes shall mate and match piping and equipment connections.

B. Water Flow Indicators: vane type waterflow detector, rated to 250 psig; designed for horizontal or vertical installation; have 2-SPDT circuit switches to provide isolated alarm and auxiliary contacts, 7 ampere 125 volts AC and 0.25 ampere 24 Volts DC; complete with factory-set, field-adjustable retard element to prevent false signals, and tamper-proof cover which sends a signal when cover is removed.

C. Water-Motor Gongs: 10 inch diameter cast aluminum gong, with factory-finish in red enamel; Pelton Wheel type operator with nylon shaft bearings, and shaft length and sleeve to suit wall thickness and construction; 3/4 inch inlet and 1 inch drain.

D. Water Bells: Electrically operated vibrating bell listed for exterior use shall be electronically connected to a water flow switch. Bell shall be factory finish red.

E. Supervisory Switches: SPST, normally closed contacts, designed to signal valve in other than full open position.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PIPE APPLICATIONS

A. Install systems using schedule 40 threaded or welded, schedule 10 grooved, or combination thereof as allowed by NFPA 13 and the Owner's insurance carrier.

3.3 PIPING INSTALLATIONS

A. Locations and Arrangements: Drawings (plans, schematics, and diagrams) indicate the general location and arrangement of piping systems. So far as practical, install piping as indicated.

B. Deviations from approved "Working Plans" for sprinkler piping, require written approval of the authority having jurisdiction. Written approval shall be on file with the Architect prior to deviating for the approved "Working Plans."

C. Install sprinkler piping to provide for system drainage in accordance with NFPA 13.

D. Install adapters on valves, apparatus, and equipment having dissimilar connections.

E. Hangers and Supports: Comply with the requirements of NFPA 13, NFPA 14 and Owner's insurance carrier. Hanger and support spacing and locations for piping joined with grooved mechanical couplings shall be in accordance with the grooved mechanical coupling manufacturer's written instructions, for rigid systems.

F. Make connections between underground and above-ground piping using an approved transition piece strapped or fastened to prevent separation.

G. Install test connections sized and located in accordance with NFPA 13 and Owner's insurance carrier, complete with shutoff valve. Test connections may also serve as drain pipes.

H. Install pressure gage on the riser or feed main at or near each test connection. Provide gage with a connection not less than 1/4 inch and having a soft metal seated globe valve, arranged for draining pipe between gage and valve. Install gages to permit removal, and where they will not be subject to freezing.

3.4 PIPE JOINT CONSTRUCTION

A. Refer to Division 23 Specification section, "BASIC PIPING MATERIALS AND METHODS".

3.5 VALVE INSTALLATIONS

A. General: Install fire protection specialty valves, fittings, and specialties in accordance with the manufacturer's written instructions, NFPA 13 and 14, and the authority having jurisdiction.

B. Control Valves: Install supervised-open control valves so located to control all sources of water supply except fire department connections. Where there is more than one control valve, provide permanently marked identification signs indicating the portion of the system controlled by each valve. Refer to Division-23 Section "MECHANICAL IDENTIFICATION" for valve tags and signs.

C. Install RPZ, Reduced Pressure Zone, backflow preventer valve in each water supply connection.

D. Alarm Check Valves: Install valves in the vertical position, in proper direction of flow including the bypass check valve and retard chamber drain line connection. Install valve trim in accordance with the valve manufacturer's appropriate trim diagram. Test valve for proper operation.

E. Dry-Pipe Valves: Install in the vertical position, in proper direction of flow, in the main supply to the dry-pipe system. Install the basic trim set, priming chamber attachment and fill line attachment in accordance with the manufacturer's written instructions. During hydrostatic test of system piping at pressures in excess of 50 psi, position the clapper in latched wide open position or removed from valve, to prevent injury to the valve. Test valve for proper operation.

F. Detector Check Valves: Install in proper direction of flow in a location to detect system leakage and unauthorized use of water, and to prevent backflow into public water mains. Install bypass meter, with gate valves on each side of the meter to permit meter removal, and check valve downstream from the meter.

3.6 SPRINKLER HEAD INSTALLATIONS

A. Use proper tools to prevent damage during installations.

3.7 FIRE DEPARTMENT CONNECTION INSTALLATIONS

A. Install automatic drip valves at the check valve on the fire department connection to the mains.

B. Install mechanical sleeve seal at pipe penetration in outside walls.

3.8 FIELD QUALITY CONTROL

A. Flush, test, and inspect sprinkler piping systems in accordance with NFPA 13 and Owner’s insurance company.

B. Flush, test, and inspect standpipe systems in accordance with NFPA 14 and Owner’s insurance company.

C. Replace piping system components which do not pass the test procedures specified, and retest repaired portion of the system.

END OF SECTION 210500

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SECTION 220001 – PLUMBING

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Time, Manner and Requirements for Submitting Sub-Bids:

1. Each sub-bid submitted for work required under this Section shall be on forms furnished in this specification and in accordance with the provisions of M.G.L. c.149 SS44A-J. Sub-bidders must be DCAM Certified in the listed trade and shall include a Current DCAM Sub-bidder Certificate of Eligibility and signed DCAM Sub-bidder's Update Statement with their bid.

2. Sub-Bids submitted shall be accompanied by BID BOND, CERTIFIED CHECK, or TREASURER'S CHECK, or CASHIERS CHECK, issued by a responsible bank or trust company, payable to the City of Worcester, in the amount of five percent (5%) of the bid. A sub-bid accompanied by any other form of bid deposit may be rejected.

C. Sub Sub-Bid Requirements: None required under this Section.

D. Reference Drawings: The Work of this Filed Sub Bid is shown on the following Contract Drawings:

NUMBER	SHEET NAME
PL-001	Underground Plumbing Legend and Notes
PL-101	Underground Plumbing New Work Plan
PL-102	Ground Floor Plumbing New Work Plan
PL-601	Plumbing Schedules

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. All Work of Section 22 11 23 – Plumbing Pumps
2. All Work of Section 22 13 16 - Drainage and Vent Systems

B. Alternates: Not Applicable.

END OF SECTION

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SECTION 22 11 23 - PLUMBING PUMPS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes pumps for plumbing service. The scope of plumbing pump requirements is indicated on Drawings and schedules, and by requirements of this Section.

1.3 SUBMITTALS

A. Refer to Division 1 and Division 23 Section “BASIC MECHANICAL REQUIREMENTS” for administrative and procedural requirements for submittals.

B. General: Submit the following:

1. Product data including certified performance curves of selected models indicating selected pump's operating point, materials of construction, weights, dimensions, furnished specialties, and accessories.

2. Shop drawings showing layout and installation requirements for sump pump sumps.

3. Wiring diagrams detailing wiring for power, signal, and control systems; differentiating between manufacturer- installed wiring and field-install wiring for sump pumps with control panels.

4. Maintenance data for plumbing pumps, for inclusion in Operating and Maintenance Manuals specified in Division 1 and Division 23 Section "Basic Mechanical Requirements."

1.4 QUALITY ASSURANCE

A. Hydraulic Institute Compliance: Design, manufacture, and install plumbing pumps in accordance with "Hydraulic Institute Standards."

B. National Electrical Code Compliance: Components shall comply with NFPA 70 "National Electrical Code."

C. UL Compliance: Plumbing pumps shall be listed and labeled by UL and comply UL Standard 778 "Motor Operated Water Pumps."

D. NEMA Compliance: Electric motors and components shall be listed and labeled NEMA.

E. SSPMA Compliance: Test and rate sump and sewage pumps in accordance with the Sump and Sewage Pump Manufacturers Association (SSPMA) Standards.

F. Single-Source Responsibility: Obtain plumbing pumps of the same type from a single manufacturer.

G. Design Criteria: The Drawings indicate sizes, profiles, connections, and dimensional requirements of plumbing pumps and are based on the specific manufacturer types and models indicated. Pumps having equal performance characteristics by other manufacturers may be considered, provided that deviations in dimensions and profiles do not change the design concept or intended performance as judged by the Engineer.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Preparation for shipping: After assembly and testing, clean flanges and exposed machined metal surfaces and treat with an anticorrosion compound. Protect pipe flanges, pipe openings and nozzles with covers or plugs.

B. Store pumps in a dry location. Retain shipping flange protective covers and protective coatings during storage.

C. Protect bearings and couplings against damage from sand, grit, and other foreign matter.

PART 2 – PRODUCTS

2.1 PUMPS, GENERAL

A. Plumbing pumps shall be factory assembled and factory tested.

B. Motors: Conform to NEMA standards; single, multiple, or variable speed with type of enclosure and electrical characteristics as indicated; have built-in thermal-overload protection and grease-lubricated ball bearings. Select motors that are non-overloading within the full range of the pump performance curve.

C. Apply factory finish paint to assembled, tested units prior to shipping.

2.2 SUBMERSIBLE SUMP PUMPS

A. General Description: Pumps shall be vertical, centrifugal, direct connected, end suction, single stage, non-clog, complete with integral inlet strainer and operating controls. Capacities and characteristics as scheduled on Drawings.

B. Motor Housing & Volute: Cast iron with integral cast-iron inlet strainer and legs to elevate the pump to permit flow into the impeller. Discharge connection flange shall be arranged for vertical discharge and 2” pipe connection.

C. Impeller: Dynamically balanced, open or semi-open, overhung, single suction, fabricated

from cast iron conforming to ASTM A-48, Class 30 keyed to shaft and secured by a locking capscrew.

D. Pump and Motor Shaft: Stainless steel, with factory-sealed, oil-lubricated ball bearings.

E. Seals: Single mechanical seal of carbon/ceramic/Buna-N.

F. Motor: Submersible hermetically sealed, oil filled, squirrel cage induction, with Class B insulation and built-in overload protection, with 15-foot, 3-conductor, waterproof cable and grounding plug.

G. Basin: Formed in concrete floor.

H. Simplex Unit Controls: 120 volt, vertical float switch complete with float, float rod, pipe mounting clamp, and 15-foot cord with piggy-back plug.

I. Manufacturers – Submersible Sump Pumps:

1. Series 1600," Weil Pump Company.
2. "Type MG," Weinman Pump (The Crane Co.)
3. Flygt.
4. Barnes Pumps Inc.
5. Goulds Pump Co.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions with Installer present, for compliance with requirements for installation and other conditions affecting performance of plumbing pumps. Do not proceed with installation until unsatisfactory conditions have been corrected.

B. Examine rough-in for plumbing piping systems to verify actual locations of piping connections prior to installation.

3.2 INSTALLATION

A. General: Comply with the manufacturer's written installation and alignment instructions.

B. Install pumps in locations and arrange to provide access for periodic maintenance, including removal of motors, impellers, couplings, and accessories.

C. Support pumps and piping separately so that the weight of the piping system does not rest on the pump.

D. Suspend inline pumps with all-thread hanger rod and vibration isolation hangers if and as

recommended by the pump manufacturer.

E. Basins: Install sump pump basins in indicated locations and connect to drainage lines. Brace interior of basin in accordance with manufacturer's instructions to prevent distortion or collapse during concrete placement. Refer to Division 3 for concrete work. Set cover over basin and fasten to top flange of basin. Install so cover is flush with finished floor.

3.3 CONNECTIONS

A. Install plumbing pumps with piping connections, valving and piping specialties as indicated on Drawings.

B. Electrical power wiring and connections are specified in Division 26 sections.

C. Control wiring and connections are specified in Division 23 Section “FACILITY MANAGEMENT SYSTEM”.

3.4 COMMISSIONING

A. Final Checks Before Start-Up Perform the following preventative maintenance operations and checks before start- up:

1. Verify the plumbing pump installation is completed in accordance with the manufacturer’s requirements.

2. Disconnect coupling and check motor for proper rotation. Rotation shall match direction of rotation marked on pump casing.

3. Check that pump is free to rotate by hand. For pumps handling hot liquids, pump shall be free to rotate with the pump hot and cold. If the pump is bound or even drags slightly, do not operate the pump until the cause of the trouble is determined and corrected.

B. Start HVAC pumps in accordance with the manufacturer’s instructions and the following:

1. Open the line valves to prevent operated against dead shutoff.

2. Start motor.

3. Check the general mechanical operation of the pump, motor and level controls for sump pumps.

END OF SECTION 221123

SECTION 22 13 16 - DRAINAGE AND VENT SYSTEMS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this Section.

1.2 SUMMARY

A. This Section includes building sanitary and storm drainage and vent piping systems, including drains and drainage specialties. The scope of drainage and vent systems is indicated on Drawings and schedules, and by requirements of this Section.

1.3 RELATED SECTIONS

A. 23 05 53 - MECHANICAL IDENTIFICATION

B. 23 07 00- MECHANICAL INSULATION

1.4 DEFINITIONS

A. Drainage System: Includes all the piping within a public or private premise which conveys sewage, rain water, or other liquid wastes to a point of disposal. It does not include the mains of public sewer systems or a private or public sewage treatment or disposal plant.

B. Vent System: A pipe or pipes installed to provide a flow of air to or from a drainage system, or to provide a circulation of air within such system to protect trap seals from siphonage and back pressure.

1.5 SUBMITTALS

A. Submit product data for the following products:

1. Drainage piping specialties:
2. Floor drains

B. Submit plumbing authority inspection reports.

C. Submit test reports specified in Part 3.

1.6 QUALITY ASSURANCE

A. Hydromechanical grease interceptors and automatic grease removal devices shall be designed and tested in accordance with ASME A112.14.3 Appendix A, ASME 112.14.4, PDI G101 or PDI G102.

1.7 DELIVERY, STORAGE AND HANDLING

A. Store pipe in a manner to prevent sagging and bending.

1.8 SEQUENCING AND SCHEDULING

A. Coordinate the installation of roof drains, flashing, and roof penetrations.

B. Coordinate flashing materials installation of roofing, waterproofing, and adjoining substrate work.

C. Coordinate the installation of drains in poured-in-place concrete slabs, to include proper drain elevations, installation of flashing, and slope of slab to drains.

D. Coordinate with installation of sanitary and storm sewer systems as necessary to interface with building drains.

1.9 EXTRA MATERIALS

A. Maintenance Stock: Provide the Owner with any special tools or appurtenances required for the removal of cleanout plugs.

PART 2 – PRODUCTS

2.1 ABOVE GROUND DRAINAGE AND VENT PIPE AND FITTINGS

A. Hubless cast iron pipe and fittings, service weight or heavier, American Society for Testing and Materials (ASTM) A-74, latest edition using neoprene sealing sleeves meeting specifications of ASTMC-564, and stainless steel mechanical joint couplings meeting specifications of ASTM C1277 (standard duty) or ASTM C1540 (heavy duty), latest editions. To be used for drain, waste, and vent piping above ground when manufactured in accordance with Cast Iron Soil Pipe Institute (CISPI) Standard 310, latest edition.

B. Polyvinyl chloride (PVC) plastic pipe and DWV fittings meeting requirements of ASTM D2665 and ASTM D3311, IPS diameters, Schedule 40 wall thickness, hub and spigot solvent welded joints.

2.2 UNDERGROUND BUILDING DRAIN PIPE AND FITTINGS

A. Hubless cast iron pipe and fittings, service weight or heavier, American Society for Testing and Materials, ASTM A-74, latest edition, using neoprene sealing sleeves meeting specifications of (ASTM) number C-564, and stainless steel mechanical joint couplings meeting specifications of ASTM C1277 (standard duty) or ASTM C 1540 (heavy duty) latest editions. To be used for drain, waste, and vent piping below ground when manufactured in accordance with Cast Iron Soil Pipe Institute (CISPI) Standard 310, latest edition. All connectors, regardless of pipe size, shall be four band connectors.

B. Polyvinyl chloride (PVC) plastic pipe and DWV fittings meeting requirements of ASTM D2665 and ASTM D3311, IPS diameters, Schedule 40 wall thickness, hub and spigot solvent welded joints.

2.3 DRAINAGE PIPING SPECIALTIES

A. Backwater Valves: Valve assembly shall be bronze fitted cast-iron, in-line style, with screwed cover and shall comply with ASME A112.14.1. Flapper shall provide a maximum ¼" clearance between swing check flapper and seat for air circulation. Valve ends shall suit piping material.

1. Josam Co. #67400 series
2. J.R. Smith Co. #7022 series
3. Zurn Industries #Z-1090 series

B. Floor Cleanouts: Cast iron body and frame, with bronze or brass cleanout plug and adjustable round top. Provide nickel bronze top for areas with exposed concrete finishes; in all other areas provide tops suitable for the finishes intended for the area.

1. Josam Co. #58460A series
2. J.R. Smith Co. #4020 series
3. Zurn Industries #Z-1400

C. Wall Cleanouts: Cast iron body clean out tee adaptable to pipe with bronze or brass cleanout plug with tapping to accept wall cover. Round stainless steel cover including screws.

1. Josam Co. #58910 & 58600 series
2. J.R. Smith Co. #4530 series
3. Zurn Industries #Z-1446

D. Floor Drain Barrier Type Trap Seal: ASSE 1072 certified commercial grade UV and ozone resistant plastic frame with rubber diaphragm to allow gray water flow and to seal the drain opening in the absence of flow.

1. MIFAB MI-GARD.
2. RectorSeal SureSeal.
3. Precision Plumbing Products Pro-Drain Trap Seal.

2.4 FLOOR DRAINS

A. General:

1. Floor drain type designations and sizes are indicated on Drawings.

2. Provide trap assemblies with trap primer connections or trap seal fittings for floor drains where indicated on the Drawings.

3. Floor drains shall comply with ASME A112.3.1, ASME A112.6.3 or CSA B79.

B. Floor Drain Type "FD-1", 4" Diameter, Light-Duty: Cast iron body with no-hub outlet and flashing collar with adjustable strainer head, 6" strainer with 6" diameter cast iron funnel for indirect connection.

1. J.R. Smith Co. #3510 series

2.5 INTERCEPTORS

A. General:

1. Oil water separators designations and sizes are indicated on Drawings.

B. Oil Water Separator Type "OWS-1", 4" plain end inlet/outlet, 3" plain end vents, polyethylene high efficiency oil/water separator with slick stick oil level monitoring system.

1. Striem #OS-50-SS

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify existing grades, inverts, utilities, obstacles, and topographical conditions prior to installations.

B. Examine rough-in requirements for plumbing fixtures and other equipment having drain connections to verify actual locations of piping connections prior to installation.

C. Examine walls, floors, roof, and plumbing chases for suitable conditions where piping and specialties are to be installed.

D. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION FOUNDATION FOR UNDERGROUND BUILDING DRAINS

A. Grade trench bottoms to provide a smooth, firm, and stable foundation, free from rock, throughout the length of the pipe.

B. Remove unstable, soft, and unsuitable materials at the surface upon which pipes are to be laid and backfill with clean sand or pea gravel to indicated invert elevation.

C. Shape bottom of trench to fit bottom of pipe for 90º (bottom ¼ of the circumference). Fill unevenness with tamped sand backfill. At each pipe joint dig bell holes to relieve the pipe connector of all loads, and to ensure continuous bearing of the pipe barrel on the foundation.

3.3 PIPE APPLICATIONS

A. Install cast iron soil pipe and fittings for above and below ground, within building, for all

sanitary and storm piping services.

3.4 PIPE AND TUBE JOINT CONSTRUCTION

A. Cast Iron Soil Pipe: Make hubless joints in accordance with the recommendations in the CISPI Cast Iron Soil Pipe and Fittings Handbook, Chapter IV.

3.5 INSTALLATION

A. General Locations and Arrangements: Drawings (plans, schematics, and diagrams) indicate the general location and arrangement of the piping systems. Location and arrangement of piping layout take into account many design considerations. So far as practical, install piping as indicated.

B. Use fittings for all changes in direction and all branch connections.

C. Install exposed piping at right angles or parallel to building walls. Diagonal runs are not permitted, unless expressly indicated.

D. Install piping free of sags or bends and with ample space between piping to permit proper insulation applications where applicable.

E. Conceal all pipe installations in walls, pipe chases, utility spaces, above ceilings, below grade or floors, unless indicated to be exposed to view.

F. Install piping tight to slabs, beams, joists, columns, walls, and other permanent elements of the building. Allow sufficient space above removable ceiling panels to allow for panel removal.

G. Exterior Wall Penetrations: Seal pipe penetrations through exterior walls using sleeves and mechanical sleeve seals specified in Division 23, “BASIC PIPING MATERIALS AND METHODS.”

H. Fire Barrier Penetrations: Where pipes pass through fire rated walls, floors and assemblies, maintain the fire rated integrity.

I. Make changes in direction for drainage and vent piping using appropriate 45 degree wyes, half wyes, or long sweep quarter, sixth, eighth, or sixteenth bends. Sanitary tees or short quarter bends may be used on vertical stacks of drainage lines where the change in direction of flow is from horizontal to vertical, except use long turn tees where two fixtures are installed back to back and have a common drain. Straight tees, elbows, and crosses may be used on vent lines. No change in direction of flow greater than 90º shall be made. Where different sizes of drainage pipes and fittings are connected, use proper size, standard increasers and reducers. Reduction of the size of drainage piping in the direction of flow is prohibited. A 4 inch by 3 inch water closet connection is permitted.

J. Install underground building drains to conform with the plumbing code, and in accordance with the Cast Iron Soil Pipe Institute Engineering Manual. Lay underground building drains beginning at low point of systems, true to grades and alignment indicated with unbroken continuity of invert. Maintain swab or drag in line and pull past each joint as it is completed.

K. Install building drain pitched down at minimum slope of ¼inch per foot (2%) for piping 2 ½ inch and smaller, 1/8 inch per foot (1%) for piping 3 inch to 6 inch and 1/16 inch per foot (0.5%) for 8 inch and larger.

L. Extend building drain to connect to building sewer piping, of size and in location indicated. Building sewer piping is specified in a Division 2 section. Maintain minimum 10 foot horizontal separation to the building water service line.

M. Install sleeve and mechanical sleeve seal through foundation wall for watertight installation.

N. Waste piping above any working, storage or eating surfaces in food service establishments shall be suitably protected to prevent contamination from leakage.

O. Drainage piping shall not be installed or altered that creates a dead end (developed length of 2 feet or more) section of piping. Cleanout extensions and piping for future fixtures are not considered as dead ends.

P. Insulate all piping and equipment in accordance with section 23 07 00 Mechanical Insulation.

Q. Label piping and plumbing components in accordance with section 23 05 53.

3.6 HANGERS AND SUPPORTS

A. General: Refer to Division 23 Section, “HANGERS AND SUPPORTS”.

3.7 INSTALLATION OF PIPING SPECIALTIES

A. Install backwater valves in sanitary building drain piping as indicated, and as required by the plumbing code. Ensure that access is provided to the working parts for service and repair.

B. Install expansion joints on vertical risers as indicated, and as required by the plumbing code.

C. Cleanouts: Install cleanouts in drainage system piping as indicated, and:

1. As required by plumbing code including clearances for rodding;

2. At each change in direction of piping greater than 45º;

3. At minimum intervals of 50' for piping 4" and smaller and 100' for larger piping;

4. At base of each vertical sanitary or storm stack.

5. At the building drain and building sewer junction (30 inches developed length from the exterior face of the building wall) or interior to the building within a 10 foot developed length of the junction.

D. Cleanouts Covers: Install floor and wall cleanout covers for concealed piping, types as required. The Contractor shall provide pipe extensions as required to be flush with the finish

surface. The Contractor shall also coordinate with all other trades to determine the appropriate floor finish and provide a floor cleanout cover compatible with the finish floor material.

E. Coordinate the installation of access doors by the general contractor in non-accessible ceilings and at walls where required to access concealed cleanouts.

3.8 INSTALLATION OF FLOOR DRAINS AND TRENCH DRAINS

A. Install floor drains and trench drains in accordance with manufacturer's written instructions and in locations indicated.

B. Install floor drains at low points of surface areas to be drained, or as indicated. Set tops of drains flush with finished floor.

C. Set drain elevation depressed below finished slab elevation as listed below to provide proper slope to drain.

Depression	Radius of area drained
½"	5'
¾"	10'
1"	15'
1¼"	20'
1½"	25'

D. Trap all drains connected to the sanitary sewer.

E. Install drain flashing collar or flange so that no leakage occurs between drain and adjoining flooring. Maintain integrity of waterproof membranes, where penetrated.

1. Position drains so that they are accessible and easy to maintain.

3.9 INSTALLATION OF INTERCEPTORS

A. Interceptors shall be installed in accordance with the manufacturer’s instructions.

B. Hydromechanical grease interceptors and grease removal devices shall be installed in compliance with ASME A112.14.3, ASME A112.14.4 or PDI G101 where manufacturer’s instructions are not provided.

C. Install interceptors with ready access for inspection and maintenance.

3.10 CONNECTIONS

A. Piping Runouts to Fixtures: Provide drainage and vent piping runouts to plumbing fixtures, floor drains and trench drains, with approved trap, of sizes indicated; but in no case smaller than required by the plumbing code.

B. Locate piping runouts as close as possible to bottom of floor slab supporting fixtures or drains.

3.11 FIELD QUALITY CONTROL

A. Inspections

1. Do not enclose, cover, or put into operation the drainage and vent piping system until it has been inspected and approved by the authority having jurisdiction.

2. During the progress of the installation, notify the authority having jurisdiction, at least 5 days prior to the time such inspection must be made. Perform tests specified below in the presence of the authority unless the inspection requirement is waived by the authority.

   a. Underground Inspection: Arrange for inspection after trenches or ditches are excavated and bedded, piping is installed and before any backfill is put in place.

   b. Rough-in Inspection: Arrange for inspection of the piping system after system is roughed-in and before concealed or closed-in and prior to setting fixtures.

   c. Final Inspection: Arrange for a final inspection by the authority to observe the tests specified below if requested by the authority and to ensure compliance with the requirements of the plumbing code.

   d. Other Inspections: Arrange for other inspections in addition to the above if requested by the authority.

   e. Reinspections: Whenever the piping system fails to pass the test or inspection, make the required corrections, and arrange for reinspected by the plumbing authority.

3. Reports: Submit inspection reports, signed by the authority having jurisdiction.

B. Piping System Test: Test drainage and vent system in accordance with the plumbing code and the following:

1. Test for leaks and defects all new drainage and vent piping systems and parts of existing systems, which have been altered, extended or repaired. If testing is performed in segments, submit a separate report for each test, complete with a diagram of the portion of the system tested.

2. Leave uncovered and unconcealed all new, altered, extended, or replaced drainage and vent piping until it has been tested and approved. Expose all such work for testing that has been covered or concealed before it has been tested and approved.

3. Rough Plumbing Test Procedure: Test the piping of plumbing drainage and venting systems upon completion of the rough piping installation. Test with

either water or, for piping systems other than plastic, by air.

a. Water Test: Tightly close all openings in the piping system, and fill with water to the point of overflow, but not less than 10 feet head of water. Water level shall not drop during a minimum 1 hour test period. Test piping in sections as required to prevent pressurizing no hub couplings beyond the manufacturer's recommendations. Inspect all joints for leaks.

b. Air Test: Tightly close all openings in the piping system, and introduce air under pressure until there is a uniform pressure of 5 psig. Air pressure shall not drop during a minimum 1 hour test period.

4. Finished Plumbing Test Procedure: After the plumbing fixtures have been set and their traps filled with water, their connections shall be visually tested in sufficient detail to determine compliance with the plumbing code. When a smoke test is utilized, plug the stack openings on the roof and building drain where it leaves the building, and introduce a pungent, thick smoke with a smoke machine into the entire system and pressurize the system to a pressure of 1" water column. Use a "U" tube or manometer inserted in the trap of a water closet to measure this pressure. Air pressure shall remain constant without the introduction of additional air throughout the 15 minute test period. Inspect all plumbing fixture connections for smoke leaks.

5. Repair all leaks and defects using new materials and retest system or portion thereof until satisfactory results are obtained.

6. Arrange for observation of tests by the authority having jurisdiction when so requested by the authority.

7. Prepare and submit reports for all tests and required corrective action and make reports available to the authority having jurisdiction when so requested by the authority.

3.12 ADJUSTING AND CLEANING

A. Clean interior of piping system. Remove dirt and debris as work progresses.

B. Clean drain strainers, domes, sediment buckets, trench drains and traps. Remove dirt and debris.

3.13 PROTECTION

A. Protect drains during remainder of construction period, to avoid clogging with dirt and debris, and to prevent damage from traffic and construction work.

B. Place plugs in ends of uncompleted piping at end of day or whenever work stops.

END OF SECTION 221316

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SECTION 23 05 29 HANGERS AND SUPPORTS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawing and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This section includes the following:

1. Horizontal piping hangers and supports.
2. Vertical piping clamps.
3. Hanger rod attachments.
4. Building attachments.
5. Saddles and shields.
6. Miscellaneous materials.
7. Pipe alignment guides.
8. Anchors.
9. Equipment supports.

B. Related Sections:

1. For spring isolation hangers refer to Division 23 section, “VIBRATION CONTROL”.

1.3 SUBMITTALS

A. Product data, including installation instructions for each type of hangers and supports. Submit pipe hanger and support schedule showing Manufacturer's figure number, size, piping system, and features for each required.

B. Welder certificates signed by Contractor certifying that welders comply with requirements specified under “Quality Assurance” Article.

C. Maintenance data for engineered hangers and supports for inclusion in Operating and Maintenance Manual specified in Division 1 and Division 23 Section "BASIC MECHANICAL REQUIREMENTS."

1.4 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with applicable codes pertaining to product materials and installation of supports and anchors.

PART 2 – PRODUCTS

2.1 MANUFACTURED UNITS

A. Hangers and support components shall be factory fabricated of materials, design, and manufacturer complying with MSS SP-58, current edition.

B. Pipe attachments shall have nonmetallic coating for electrolytic protection or shall be of copper construction where attachments are in direct contact with copper tubing.

C. Pipe Alignment Guides: Factory fabricated, of cast semi-steel or heavy fabricated steel, consisting of bolted two-section outer cylinder and base with two-section guiding spider that bolts tightly to pipe. Length of guides shall be as recommended by manufacturer to allow required travel.

2.2 MISCELLANEOUS MATERIALS

A. Steel Plates, Shapes, and Bars: ASTM A 36.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions under which supports and anchors are to be installed. Do not proceed with installation until unsatisfactory conditions have been corrected.

B. Review with the Architect substrates of questionable integrity prior to installation.

3.2 INSTALLATION OF HANGERS AND SUPPORTS

A. General: Install hangers, supports, clamps and attachments to support piping properly from building structure; comply with MSS SP-69 and SP-89. Install supports with maximum spacings complying with the most stringent of:

1. MSS SP 69, latest edition.
2. Applicable Mechanical and Plumbing Codes.
3. The following schedule:

	Pipe Size	Steel Pipe	Copper Pipe	Cast Iron Pipe	PVC Pipe
Horizontal	≤¾″	7′	5′	10′	4′
	1″ – 1 ¼″	7′	6′	10′	4′
	1½″	9′	8′	10′	4′
	2″	10′	8′	10′	4′
	2½″	11′	9′	10′	4′
	≥3″	12′	10′	10′	4′

	Pipe Size	Steel Pipe	Copper Pipe	Cast Iron Pipe	PVC Pipe
Vertical	**All sizes: at every floor or as scheduled**	**12′**	**12′**	**10′**	**4′**

a. The above chart reflects PVC pipe spacing with 100°F fluid temperature. Higher temperatures may require closer spacings, refer to manufacturer's printed recommended spacings.

B. Arrange for grouping of parallel runs of horizontal piping supported together on field fabricated, heavy duty trapeze supports where possible. Where piping of various sizes are supported together by trapeze supports, space hangers for smallest pipe size or install intermediate supports for smaller diameter pipe as specified above for individual pipe hangers. Where piping is supported with trapeze supports, install clamps or clips to keep lines in their relative lateral positions. Lines subject to thermal expansion shall be free to roll axially or slide on the piping support.

C. Install building attachments within concrete or to structural steel. Install additional attachments at concentrated loads, including valves, flanges, guides, strainers, expansion joints, and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten insert to forms

D. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers, and other accessories.

E. Steel 'C' clamps (MSS type 23) are permitted for use with hangers supporting single pipes ≤2". Use malleable iron beam clamps (MSS type 19) or center beam hangers (MSS types 21, 22, 27, 28, 29, or 30) for single pipe hangers >2" and multiple pipe hangers

F. Trapezes: Provide field fabricated or pre-manufactured.

1. Field Fabricated, Heavy Duty Steel Trapezes: Fabricate from steel shapes selected for loads required; weld steel in accordance with AWS D-1.1.

2. Manufactured Steel Trapezes: Manufactured steel channel shapes of dimensions and gauge as required for loads carried per ASTM A570 GR 33 and A366 as manufactured by Unistrut or approved equal.

3. Trapeze hangers shall be sized for all loads imposed on the trapeze and in accordance with all applicable codes.

4. Where trapeze hangers support fire protection pipes, the trapeze must conform to the requirements of NFPA 13.

5. Trapezes for exterior locations must be provided with a galvanized or rust inhibiting acrylic baked enamel finish.

G. Install hangers and supports to allow controlled movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends and similar units.

H. Load Distribution: Install hangers and supports so that piping live and dead loading and stresses from movement will not be transmitted to connected equipment.

I. Pipe Slopes: Install hangers and supports to provide indicated and specified pipe slopes, and so that maximum pipe deflections allowed by ASME B31.9 Building Services Piping Code is not exceeded.

J. Uninsulated Piping: Provide adjustable clevis hangers, MSS Type-1. Provide steel for use with steel piping and copper for use with copper piping. For any other piping system, provide hangers of a compatible material.

3.3 INSULATED PIPING REQUIREMENTS

A. Supports for steam and condensate return piping 2" and larger and heating hot water piping 3" and larger shall be provided with a slide support or saddle and roller hanger:

1. Provide Teflon slide type supports MSS Type 35 or provide protection saddles MSS Type 39 with either adjustable roller hangers MSS Type 43 or single pipe rolls MSS type 41. Fill interior voids of saddles with segments of insulation that match adjoining pipe insulation

B. Supports for piping lines 1-½" and larger and not provided with a slide or saddle and roller, shall be provided with a non-compressible insulation insert and shield:

1. Hangers: Provide adjustable steel clevis hangers MSS Type 1 for insulated piping, sized for insulation outside diameter.

2. Shields: Install G-90 galvanized steel protective insulation shields MSS type 40.

3. Shields shall span an arc of 180°, minimum sizes as follows:

Pipe Size	Length	Thickness
¼" → 3 ½"	12"	18 ga
4"	12"	16 ga
5" → 6"	18"	16 ga
8" → 14"	24"	14 ga
16" → 24"	24"	12 ga

4. Inserts: Install high compressive strength calcium silicate insert at hangers. Insert material shall be at least as long as the protective shield. Insert shall encompass at least the bottom 180^0 of the piping.

a. Where piping insulation includes a vapor barrier, the vapor barrier must

be continuous over the non-compressible insert insulation.

C. Supports for all insulated piping that does not require a slide or saddle and roll or non-compressive insert shall be provided with a protective shield that complies with above requirements for shields.

3.4 INSTALLATION OF ANCHORS

A. Fabricate and install anchors by welding steel shapes, plates, and bars to piping and to structure. Comply with ASME B31.9 and with AWS Standards D1.1.

B. Where expansion compensators are indicated, install anchors in accordance with expansion unit manufacturer's written instructions to control movement to compensators.

C. Anchor Spacings: Where not otherwise indicated, install anchors at ends of principal pipe runs, at intermediate points in pipe runs between expansion loops and bends. Make provisions for preset of anchors as required to accommodate both expansion and contraction of piping.

3.5 INSTALLATION OF PIPE ALIGNMENT GUIDES

A. Install pipe alignment guides on piping that adjoins expansion joints and elsewhere as indicated.

B. Anchor to building substrate.

C. Cold set in accordance with manufacturer recommendations.

3.6 EQUIPMENT SUPPORTS

A. Fabricate structural steel stands to suspend equipment from structure above or support equipment above floor.

B. Grouting: Place grout under supports for piping and equipment.

3.7 METAL FABRICATION

A. Cut, drill, and fit miscellaneous metal fabrications for pipe anchors and equipment supports. Install and align fabricated anchors in indicated locations.

B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.

C. Field Welding: Comply with AWS D1.1 for procedures of manual shielded metal-arc welding, appearance and quality of welds made, methods used in correcting welding work, and the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

2. Obtain fusion without undercut or overlap.

3. Remove welding flux immediately.

4. Grind smooth welds at exposed connections so that no roughness shows after finishing, and so that contours of welded surfaces match adjacent contours.

3.8 ADJUSTING

A. Hanger Adjustment: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

B. Touch Up Painting: Immediately after erection of anchors and supports, clean field welds and abraded areas of shop paint and paint exposed areas with same material as used for shop painting to comply with SSPC-PA-1 requirements for touch-up of field-painted surfaces.

C. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.

D. For galvanized surfaces clean welds, bolted connections and abraded areas and apply galvanizing repair finish to comply with ASTM A 780.

END OF SECTION 230529

SECTION 23 05 48 - VIBRATION CONTROL

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this Section.

B. This Section shall be considered as a part of each Division 23 section making reference to vibration control products specified herein.

1.2 SUMMARY

A. Extent of vibration control work required by this Section is indicated on Drawings and schedules, and/or specified in other Division 21, 22 and 23 sections.

B. Types of vibration control products specified in this Section include the following:

1. Vibration Isolation Springs.
2. Flexible Pipe Connectors.

C. Vibration control products furnished as integral part of factory-fabricated equipment are specified as part of equipment assembly in other Division 21, 22 and 23 sections.

D. Refer to other Division 23 sections for equipment foundations, hangers, sealants, gaskets, and other work related to vibration control work.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's technical product data and installation instructions for each type of vibration control product. Submit schedule showing size, type, deflection, and location for each product furnished.

B. Shop Drawings: Submit manufacturer's assembly-type shop drawings indicating dimensions, weights, required clearances, and method of assembly of components. Detail bases, and show location of equipment anchoring points, coordinated with equipment manufacturer's shop drawings. Provide detail application charts indicating how similar isolators of different capacities are differentiated.

C. Maintenance Data: Submit maintenance data for each type of vibration control product. Include this data, product data, and shop drawings in maintenance manual; in accordance with requirements of Division 1.

1.4 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of vibration control products, of type, size, and capacity required, whose products have been in satisfactory use in similar service for not less than 5 years.

1. Except as otherwise indicated, obtain vibration control products from single manufacturer.

2. Engage manufacturer to provide technical supervision of installation of vibration control products.

PART 2 – PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide vibration control products of one of the following:

1. Amber/Booth Co.
2. Kinectics Noise Control
3. Korfund Dynamics Corp.
4. Mason Industries, Inc.
5. Sound Seal, United Process, Inc.
6. Vibration Mountings and Controls, Inc.

2.2 VIBRATION CONTROL MATERIALS AND SUPPORTS UNITS

A. General: The references to type refer to the descriptions noted in the 2015 ASHRAE HVAC Applications Handbook, chapter 48.

B. Vibration Isolation Springs: Wound-steel compression springs, or high-strength spring alloy steel; with spring diameter not less than 0.8 of compressed height of spring at rated loads. Provide minimum additional travel to solid, equal to 50% of rated deflection. Provide spring wire with elastic limit stress exceeding at solid deflection.

1. Spring Isolators, Free-Standing (Type 3): Except as otherwise indicated, provide vibration isolation spring between top and bottom loading plates, and with pad-type isolator bonded to bottom of bottom loading plate. Include studs or cups to ensure centering of spring on plates. Include leveling bolt with lock nuts and washers, centered in top plate, arranged for leveling and anchoring supported equipment as indicated. Include holes in bottom plate for bolting unit to substrate as indicated.

2. Spring Isolators, Housed (Type 4): Except as otherwise indicated, provide vibration isolation spring between telescoping steel housings with top and bottom loading plates, and with pad type isolator bonded to bottom of loading plate.

Include resilient inserts to separate and guide telescoping housings.

a. Equip top loading plate with equipment anchorages as indicated or as required for support and attachment.

b. Include pad type isolator bonded to top of top loading plate, except on units with leveling bolts.

c. Include holes in bottom plate for bolting unit to substrate.

3. Spring Isolators, Vertically-Restrained (Type 4): Provide spring isolators in housing that includes vertical limit stops. Design housing to act as blocking during erection, and with installed height and operating height being equal. Maintain ½" minimum clearance around restraining bolts, and between housing and springs. Design so limit stops are out of contact during normal operation.

4. Spring Isolators, Earthquake-Restrained: Provide spring isolator assembly which will resist horizontal and vertical forces.

C. Flexible Pipe Connectors:

1. For non-ferrous piping, provide bronze hose covered with bronze wire braid with copper tube ends or bronze flanged ends, braze-welded to hose.

2. Flexible Pipe Connectors: Provide neoprene or EDPM construction consisting of multiple plies of nylon tire cord fabric and elastomer molded and cured in hydraulic rubber presses. Provide straight or elbow connector as indicated, rated at 125 psi at 220°F.

PART 3 – EXECUTION

3.1 INSPECTION

A. Examine areas and conditions under which vibration control units are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.2 PERFORMANCE OF ISOLATORS

A. General: Comply with minimum static deflections recommended by ASHRAE, for selection and application of vibration isolation materials and units as indicated.

B. Manufacturer's Recommendations: Except as otherwise indicated, comply with manufacturer's recommendations for selection and application of vibration isolation materials and units.

3.3 APPLICATIONS

A. General: Select vibration control products in accordance with the 2015 ASHRAE HVAC Applications Handbook, Chapter 48 "Sound and Vibration Control". Where more than one type of product is offered, selection is Designer's option and shall be submitted for review. Amend Chapter 48 as follows:

1. Tank mounted air compressors and vacuum pumps ≤10 HP, located on other than slab on grade, shall be mounted on type 'C' base.

2. Close coupled, end suction, and split case pumps on grade shall be as recommended by the manufacturer.

3. Package roof top equipment can be mounted directly on manufacturer's roof curb without additional external curb isolation.

4. Provide thrust restraints only on fans 5 HP and larger, and where fan is supported on spring isolators (fans mounted on roof curbs such as power roof exhaust fan and wall mounted propeller fans do not fall under this requirement).

B. Piping: For piping connected to equipment mounted on vibration control products, install pipe isolation hangers for first points according to the following schedule:

Isolated Pipe Hanger Requirements	
Pipe Size	Quantity of Isolated Supports
≤4"	3
5" → 8"	4
≥10"	6

3.4 INSTALLATION

A. General: Except as otherwise indicated, comply with manufacturer's instructions for installation and load application to vibration control materials and units. Adjust to ensure that units have equal deflection, do not bottom out under loading, and are not short-circuited by other contacts or bearing points. Remove space blocks and similar devices intended for temporary support during installation.

B. Install units between substrate and equipment as required for secure operation and to prevent displacement by normal forces, and as indicated.

C. Adjust leveling devices as required to distribute loading uniformly onto isolators. Shim units as required where substrate is not level.

D. Locate isolation hangers as near overhead support structure as possible.

E. Weld riser isolator units in place as required to prevent displacement from loading and operations.

F. Flexible Pipe Connectors: Install on equipment side of shutoff valves, horizontally and parallel to equipment shafts wherever possible.

3.5 ADJUSTING AND CLEANING

A. Clean each vibration control unit, and verify that each is working freely, and that there is no dirt or debris in immediate vicinity of unit that could possibly short-circuit unit isolation.

END OF SECTION 230548

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SECTION 23 05 53 - MECHANICAL IDENTIFICATION

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this Section.

1.2 SUMMARY

A. Types of identification devices specified in this Section include the following:

1. Plastic Pipe Markers.
2. Valve Tags.
3. Plastic Equipment Markers.
4. Plasticized Tags.
5. Adhesive Labels.

B. Mechanical identification furnished as part of factory fabricated equipment is specified as part of equipment assembly in other Division 21, 22 and 23 sections.

C. Refer to other Division 23 sections for identification requirements at central station mechanical control center; not work of this section.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's technical product data and installation instructions for each identification material and device required. Provide a list of the nomenclature as well as the color scheme intended for use for identification of pipe services.

B. Schedules: Submit valve and steam trap schedule for each piping system, typewritten and produced on Mechanical Contractor’s letterhead or 8½" x 11" bond paper. Tabulate valve number, piping system, system abbreviation (as shown on tag), location of valve (room or space), and variations for identification (if any). Mark valves that are intended for emergency shutoff and similar special uses, by special "flags", in margin of schedule. Tabulate steam trap numbers, equipment served and location of valve (room or space). In addition to mounted copies, include valve tag and steam trap schedules in the Maintenance Manuals that include all of the valve and steam trap schedules.

C. Maintenance Data: Include product data and schedules in maintenance manuals; in accordance with requirements of Division 1.

1.4 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Firms regularly engaged in manufacturer of identification devices of types and sizes required, whose products have been in satisfactory use in similar service for not less than five years.

B. Codes and Standards:

1. ANSI Standards: Comply with ANSI A13.1 for lettering size, length of color field, colors, and viewing angles of identification devices.

PART 2 – PRODUCTS

2.1 PLASTIC PIPE MARKERS

A. Pressure sensitive vinyl markers with flow arrows and factory applied graphics. Additionally, provide minimum 1½" wide, self-adhesive, pressure sensitive bands to further secure the marker to the pipe.

B. Pressure sensitive polyester markers suitable for exterior use with flow arrows and factory applied graphics.

C. Insulation: Furnish ½" thick molded fiberglass insulation with jacket for each plastic pipe marker to be installed on uninsulated pipes subjected to fluid temperatures of 180° F or greater. Cut length to extend 2" beyond each end of plastic pipe marker.

D. Adjust size of marker and letters to accommodate the outside diameter, including insulation, of the pipe identified. Follow the guidelines published in ANSI A13.1 for marker/lettering size and color.

E. Lettering: Include in the submittal the manufacturer's standard preprinted nomenclature which best describes piping system in each instance, for review by the Architect/Engineer.

F. Arrows: Print each pipe marker with arrows indicating direction of flow, either integrally with piping system service lettering (to accommodate both directions), or as a separate unit of plastic.

G. Manufacturer: Subject to compliance with requirements, provide mechanical identification materials of one of the following:

1. Brady (W.H.) Co.; Signmark Div. – Self Sticking Vinyl Pipe Markers
2. Brimar Industries, Inc. – E-Z Pipe Markers
3. Seton Name Plate Corp. – Seton Code

2.2 VALVE AND STEAM TRAP TAGS

A. Provide 19 gage polished brass valve tags with stamp engraved piping system abbreviation in ¼" high letters and sequenced valve and steam trap numbers ½" high, and with 5/32" hole for fastener.

1. Provide 1½" →2" diameter tags, except as otherwise indicated.
2. Fill tag engraving with black enamel.

2.3 LETTERING AND GRAPHICS

A. General: Coordinate names, abbreviations and other designations used in mechanical identification work, with corresponding designations shown, specified or scheduled. Provide numbers, lettering and wording as indicated or, if not otherwise indicated, as required for proper identification and operation/maintenance of mechanical systems and equipment.

PART 3 – EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS

A. Coordination: Where identification is to be applied to surfaces which require insulation, painting or other covering or finish, including valve tags in finished mechanical spaces, install identification after completion of covering and painting. Install identification prior to installation of acoustical ceilings and similar removable concealment.

3.2 PIPING SYSTEM IDENTIFICATION

A. General: Install pipe markers of the following type on each system indicated to receive identification, and include arrows to show normal direction of flow:

1. Plastic pipe markers, with application system as indicated under "Materials" in this section. Install on pipe insulation segment where required for hot uninsulated pipes. Where additional bands are required to secure the marker to the (insulated) pipe, the band shall completely circumvent the pipe and lap itself by a minimum of 1".

B. Locate pipe markers and color bands as follows:

1. Near each valve and control device.
2. Near each branch, excluding short takeoffs for fixtures and terminal units; mark each pipe at branch, where there could be question of flow pattern.
3. Near locations where pipes pass through walls or floors/ ceilings, or enclosures.
4. At access doors, manholes and similar access points that permit view of concealed piping.
5. Near major equipment items and other points of origination and termination.
6. Spaced intermediately at maximum spacing of 25' along each piping run.

3.3 VALVE AND STEAM TRAP IDENTIFICATION

A. General: Provide a valve tag on every valve, cock and control device in each piping system; provide a steam trap tag on every steam trap. Exclude check valves, valves within factory fabricated equipment units, plumbing fixture faucets, interior and exterior hose bibs, shut off valves at plumbing fixtures, HVAC terminal devices, and similar rough-in connections of end use fixtures and units. List each tagged valve and steam trap in the valve and steam trap schedules for each piping system.

3.4 ADJUSTING AND CLEANING

A. Adjusting: Relocate any mechanical identification device that has become visually blocked by work of this division or other divisions.

B. Cleaning: Clean face of identification devices, and glass frames of valve charts.

END OF SECTION 230553

SECTION 260000 – ELECTRICAL

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.

B. Time, Manner and Requirements for Submitting Sub-Bids:

1. Each sub-bid submitted for work required under this Section shall be on forms furnished in this specification and in accordance with the provisions of M.G.L. c.149 SS44A-J. Sub-bidders must be DCAM Certified in the listed trade and shall include a Current DCAM Sub-bidder Certificate of Eligibility and signed DCAM Sub-bidder's Update Statement with their bid.

2. Sub-Bids submitted shall be accompanied by BID BOND, CERTIFIED CHECK, or TREASURER'S CHECK, or CASHIERS CHECK, issued by a responsible bank or trust company, payable to the City of Worcester, in the amount of five percent (5%) of the bid. A sub-bid accompanied by any other form of bid deposit may be rejected.

C. Sub Sub-Bid Requirements:

1. 28 31 00 – Fire Alarm Systems

D. Reference Drawings: The Work of this Filed Sub Bid is shown on the following Contract Drawings:

NUMBER	SHEET NAME
E-001	Electrical Legend
E-002	Mounting Height and Local Alarm Details
EP-101	Ground Floor Electrical New Work Plan
FA-000	Fire Alarm Legend, IO Matrix
FA-001	Fire Alarm Riser
FAD-101	Ground Fire Alarm Demolition Plan
FAD-102	First Floor Fire Alarm Demolition Plan
FAD-103	Third Floor Fire Alarm Demolition Plan
FAD-104	Second and Fourth Floor Fire Alarm Demolition Plan
FAD-105	Fifth Floor Fire Alarm Demolition Plan
FA-101	Ground Floor Fire Alarm New Work Plan
FA-102	First Floor Fire Alarm New Work Plan
FA-103	Second Floor Fire Alarm New Work Plan
FA-104	Third Floor Fire Alarm New Work Plan
FA-105	Fourth Floor Fire Alarm New Work Plan
FA-106	Fifth Floor Fire Alarm New Work Plan

1.2 DESCRIPTION OF WORK

A. Work Included: Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:

1. All Work of Section 26 00 01 - Basic Electrical Requirements
2. All Work of Section 26 01 00 – Basic Electrical Materials and Methods
3. All Work of Section 26 05 19 – Wires and Cables
4. All Work of Section 26 05 26 – Grounding
5. All Work of Section 26 05 29 – Supporting Devices
6. All Work of Section 26 05 33 – Raceways
7. All Work of Section 26 05 29 – Supporting Devices
8. All Work of Section 26 05 33 – Raceways
9. All Work of Section 26 05 53 – Electrical Identification
10. All Work of Section 26 27 16 – Cabinets, Boxes and Enclosures
11. All Work of Section 26 27 26 – Wiring Devices

B. Alternates: Not Applicable.

END OF SECTION

SECTION 260001 - BASIC ELECTRICAL REQUIREMENTS

1.1 – GENERAL

1.2 SUMMARY

A. This Section covers the basic requirements which are applicable to all electrical work and the testing of the completed electrical systems.

B. Division 26 covers, in broad detail, the extent of the electrical work and the equipment to be provided and shall not be construed as a complete description of all of the details of design and construction required.

C. The Contractor shall be responsible for reviewing all Contract Drawings and Specifications relating to the project to insure the fact that all related electrical work associated with other trades will be coordinated. No extra compensation will be allowed for his lack of compliance herewith.

D. Provide all labor, materials, equipment, appliances and tools and perform all work necessary for the complete execution of the electrical work as shown on the Drawings, required by the Specifications and work not specifically shown or specified, yet required to insure proper and complete operation of all systems and to satisfy the design intent inherent in the work and to comply with all applicable codes and regulations. All electrical equipment shall be rated for the environment in which it is installed.

1.3 QUALITY ASSURANCE

A. All materials, equipment, sizes, capacities and installation of electrical work shall conform to the latest requirements of the National Electrical Code, National Electrical Safety Code, the National Electrical Manufacturers Association, the board of Fire Underwriters, the Underwriter's Laboratories, Inc., the Institute of Electrical and Electronics Engineers, the prevailing State and Local Electrical Codes and EIA/TIA Telecommunications standard.

B. Secure and pay for all permits and inspections required by any of the foregoing authorities. The electrical inspection shall be made and approved by the State and/or Local authority having jurisdiction.

C. All electrical work shall be performed by duly licensed electricians who are qualified to do such work, and who are normally engaged in this type of work. Because of the complexity of the electrical work, unskilled labor is not permitted.

1.4 GUARANTEE

A. Contractor shall guarantee all equipment and workmanship free from mechanical

and electrical defects for a period of one year from the date of final acceptance. Any replacement of parts or adjustments, including labor made necessary by such defects or adjustments, shall be rectified without cost to the Owner.

1.5 SUBMITTALS

A. Provide standard catalog cuts and shop Drawings of all materials and equipment. Shop Drawings shall indicate all sizes, rating, mechanical, electrical and functional features. Poor quality reproduced Shop Drawings will be rejected.

B. Provide installation instructions and operation and maintenance manuals for all equipment.

C. All submittals shall bear a stamp which indicates the Contractor has reviewed the submittals for compliance with the specifications. Stamp shall include contractor name, project title and date.

D. Provide complete listing of all tests performed and copies of the certified test results.

1.6 RECORD DOCUMENTS

A. Prepare record documents in accordance with the requirements in Division 01. In addition to the requirements specified in Division 01, indicate installed conditions for:

1. Major raceway systems, size and location, for both exterior and interior; locations of control devices; distribution and branch electrical circuitry; and fuse and circuit breaker size and arrangements.

a. Equipment locations (exposed and concealed), dimensioned from prominent building lines.

b. Approved substitutions, Contract Modifications, and actual equipment and materials installed.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to the project properly identified with names, model numbers, types, grades, compliance labels, and other information needed for identification.

B. Properly store all materials and equipment in accordance with the manufacturers' recommendations and as required to protect them from damage and corrosion.

C. Temporarily close all openings to prevent obstruction, damage or the intrusion of foreign materials.

D. Before presenting a bid for the project, verify that all electrical equipment will be manufactured and delivered in a timely manner. Notify Engineer if any electrical equipment has an excessive lead time which may lead to construction delay.

1.8 SCHEDULING/SEQUENCING

A. Notify Engineer at least one (1) week in advance of all testing so that he may witness the tests and testing procedures.

1.9 SITE VISITATION

A. The Contractor shall visit the site and shall examine all existing conditions which may affect his work under this Contract. No claims for extra compensation will be allowed because of his lack of compliance herewith.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 – EXECUTION

3.1 ROUGH-IN

A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.

3.2 ELECTRICAL INSTALLATIONS

A. General: Sequence, coordinate, and integrate the various elements of electrical systems, materials, and equipment.

B. Coordinate electrical systems, equipment, and materials installation with other building components. Comply with the following requirements:

1. Verify all dimensions by field measurements.

2. Arrange for chases, slots, and openings in other building components during progress of construction, to allow for electrical installations.

3. Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components, as they are constructed.

4. Sequence, coordinate, and integrate installations of electrical materials and equipment for efficient flow of the work. Give particular attention to large

equipment requiring positioning prior to closing in the building.

5. Where mounting heights are not detailed or dimensioned, install systems, materials, and equipment to provide the maximum headroom possible.

6. Coordinate connection of electrical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies. Provide required connection for each service.

7. Install systems, materials, and equipment to conform with approved submittal data to greatest extent possible. Conform to arrangements indicated by the Contract Documents, recognizing that portions of the work are shown only in diagrammatic form.

8. Install systems, materials, and equipment level and plumb, parallel and perpendicular to other building systems and components, where installed exposed in finished spaces.

9. Panelboards, switches, receptacles, control stations and other control and wiring devices shall be "flush mounted", complete with cover plates or doors, as applicable, unless otherwise shown or specified.

C. Install electrical equipment to facilitate servicing, maintenance, and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.

3.3 INSPECTION

A. Prior to performing work required under Division 26, carefully inspect all existing conditions and the installed work of all other trades and verify that all conditions and all such work is complete to the point where the electrical work may properly commence.

3.4 PERFORMANCE

A. The Drawings indicate the general arrangement of electrical equipment, conduits and other work. Field verification of all dimensions is required. Specifications and Drawings are for assistance and guidance, but exact locations, distances and levels shall be governed by actual field conditions. Conduit runs and grounding are shown diagrammatic only, and the layout does not necessarily show the total number of conduits for the circuit required, nor is the location of indicated runs intended to show the actual routing of conduits.

B. If any departures from the Drawings are deemed necessary by Contractor in order to furnish an efficient, complete and satisfactory installation, details of such departures and the reasons therefore shall be brought to the attention of Engineer.

3.5 FIELD QUALITY CONTROL

A. Provide all labor, materials, testing equipment, electricity, fuel, lights, lubricants, equipment instruments and all other materials required for conducting all tests.

B. Check for proper phase sequence and test all parts of the electrical system before placing them in service.

C. All systems shall test free from short circuits and grounds, shall be free from mechanical and electrical defects, and shall show insulation resistance between phase conductors and ground of not less than that required by NEC, or as specified herein.

D. Insulation test equipment, motors, cables, etc., shall pass the Standard Insulation Test established by the IEEE and shall be made before and after all required high potential tests. All insulation testers shall be of the motor driven, direct reading type, unless otherwise noted.

E. Check all motors for proper rotation.

3.6 ADJUST AND CLEAN

A. Clean all exposed electrical work and remove all unnecessary labels, soil, markings, and foreign materials. Do not remove labels required by the specifications, laws, regulations and codes (e.g.: UL Labels) or special labels warning of hazards, denoting special operating and maintenance procedures or labels with important or meaningful messages, directions or warnings.

B. Replace all electrical appliances or equipment which have been damaged.

3.7 PROTECTION

A. Contractor shall be responsible for proper protective and safety measures when working under the provisions of the Contract.

3.8 CUTTING AND PATCHING

A. Perform cutting, fitting, and patching of electrical equipment and materials required to:

1. Out of sequence work shall be uncovered for proper installation.

2. Remove and replace defective work.

3. Remove and replace work not conforming to requirements of the Contract

Documents.

4. Install equipment and materials in existing structures.

5. Cut, remove, and legally dispose of selected electrical equipment, components, and materials to be removed and items made obsolete by the new work.

B. Protect the structure, furnishings, finishes, and adjacent materials not indicated or scheduled to be removed.

C. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.

D. Patch existing finished surfaces and building components using new materials matching existing materials. .

E. Patch finished surfaces and building components using new materials specified for the original installation.

END OF SECTION 260001

SECTION 26 0100 - BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Requirements of the following Division 26 Sections apply to this section:

1. "Basic Electrical Requirements"

1.2 SUMMARY

A. This Section includes limited scope general construction materials and methods for application with electrical installations as follows:

1. Selective demolition including:

a. Nondestructive removal of materials and equipment for reuse or salvage as indicated.

b. Dismantling electrical materials and equipment made obsolete by these installations.

2. Excavation for underground utilities and services, including underground raceways, vaults, and equipment.

3. Miscellaneous metals for support of electrical materials and equipment.

4. Joint sealers for sealing around electrical materials, equipment and for sealing penetrations floors and walls.

5. Firestopping materials for sealing penetrations in fire and smoke barriers, floors and foundation walls.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 01 Specification Sections.

B. Shop drawings detailing fabrication and installation for metal fabrications, and wood supports and anchorage for electrical materials and equipment.

C. Schedules indicating proposed methods and sequence of operations for selective demolition prior to commencement of Work. Include coordination for shut-off of electrical service, and details for dust and noise control.

1. Coordinate sequencing with construction phasing and Owner occupancy specified in Division 01.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver joint sealer and firestopping materials in original unopened containers or bundles with labels informing about manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multi-component materials.

B. Store and handle joint sealer and firestopping materials in compliance with the manufacturers' recommendations to prevent their deterioration and damage.

1.5 PROJECT CONDITIONS

A. Conditions Affecting Selective Demolition: The following project conditions apply:

1. Protect adjacent materials indicated to remain. Install and maintain dust and noise barriers to keep dirt, dust, and noise from being transmitted to adjacent areas. Remove protection and barriers after demolition operations are complete.

2. Locate, identify, and protect electrical services passing through demolition area and serving other areas outside the demolition limits. Maintain services to areas outside demolition limits. When services must be interrupted, install temporary services for affected areas.

3. The contractor shall maintain any process equipment, utility, etc., necessary to maintain continuous treatment. Any such equipment that must be relocated, either temporarily or permanently, or any process equipment, utilities, etc., that must be installed, either temporarily or permanently, to maintain wastewater or sludge treatment shall be the responsibility of the Contractor. The Contractor shall include the cost of all temporary facilities required to maintain treatment, meeting secondary standards, during the construction period in his bid prices. The cost shall include the cost of all labor, tools, equipment and materials necessary.

B. Conditions Affecting Excavations: The following project Conditions apply:

1. It is the responsibility of the Contractor to maintain and protect existing building services which passes through the area affected by selective demolition. Contractor shall include in his bid price all costs (material, labor, etc.) associated to maintain these services and/or temporarily refeed.

2. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by excavation operations.

3. Existing Utilities: Locate existing underground utilities in excavation areas. If utilities are indicated to remain, support and protect services during excavation operations.

4. Remove existing underground utilities indicated to be removed.

5. Uncharted or Incorrectly Charted Utilities: Contact utility owner immediately for instructions.

a. Provide temporary utility services to affected areas. Provide minimum of 48-hour notice to owner prior to utility interruption.

1.6 EXISTING ELECTRICAL SYSTEM

A. In general the existing electrical system shall be removed, unless noted otherwise on the drawings, in areas of remodeling and renovation.

B. All electrical work shall be removed in areas where alterations and modifications are to be performed.

C. Any device which is to remain but becomes de-energized by removal of existing work shall be rewired and/or reconnected as required to maintain service to the device in question.

1.7 SEQUENCE AND SCHEDULING

A. Coordinate the shut-off and disconnection of electrical service with the Owner and the utility company.

B. Notify the Owner at least 5 days prior to commencing demolition operations.

C. Perform demolition in phases as indicated.

1.8 CONTINUITY OF SERVICE

A. The Contractor shall guarantee continuance of electrical service to all areas of the project presently receiving electrical service which are not designated as construction areas. The Contractor shall schedule, with the Owner, power shutdowns one (1) week in advance.

1.9 PENETRATIONS

A. Except where absolutely necessary, do not penetrate roofs and waterproof surfaces. Where required, make penetrations prior to the application of roofing and waterproofing materials and provide all sleeves, pitch-pockets and other acceptable items. Advise Architect in advance before making such penetrations, even where such penetrations are shown on the Drawings.

B. All penetrations through rated assemblies shall maintain the requirements of the assembly rating.

1.10 FIELD PAINTING

A. Unless otherwise specified, paint all exposed electrical work in accordance with the requirements set forth in Division 01, except for the following:

1. Contractor shall touch up all painted surfaces of equipment supplied that have been damaged during the construction process. Touch-up paint shall match finish coat.

2. Where touch-ups do not blend in with adjacent surfaces, as determined by Architect, replace or completely repaint the entire piece in question.

PART 2 – PRODUCTS

2.1 MISCELLANEOUS METALS

A. Steel plates, shapes, bars, and bar grating: ASTM A 36.

B. Cold-Formed Steel Tubing: ASTM A 500.

C. Hot-Rolled Steel Tubing: ASTM A 501.

D. Steel Pipe: ASTM A 53, Schedule 40, welded.

E. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout, recommended for interior and exterior applications.

F. Fasteners: Zinc-coated, type, grade, and class as required.

2.2 JOINT SEALERS

A. General: Joint sealers, joint fillers, and other related materials compatible with each other and with joint substrates under conditions of service and application.

B. Colors: As selected by the Architect from manufacturer's standard colors.

C. Elastomeric Joint Sealers: Provide the following types:

1. One-part, nonacid-curing, silicone sealant complying with ASTM C 920, Type S, Grade NS, Class 25, for uses in non-traffic areas for masonry, glass, aluminum, and other substrates recommended by the sealant manufacturer.

2. One part, mildew-resistant, silicone sealant complying with ASTM C 920, Type S, Grade NS, Class 25, for uses in non-traffic areas for glass, aluminum, and nonporous joint substrates; formulated with fungicide; intended for sealing interior joints with nonporous substrates; and subject to in-service exposure to conditions of high humidity and temperature extremes.

3. Products: Subject to compliance with requirements, provide one of the following:

a. One-Part, Nonacid-Curing, Silicone Sealant:

1) "Chem-Calk-N-Cure 1200," Bostic Construction Products Div. "Dow Corning 790," Dow Corning Corp.
2) "Silglaze N SCS 2501," General Electric Co.
3) "Silpruf SCS 2000," General Electric Co.
4) "864," Pecora Corp.
5) "Spectrum 1," Tremco, Inc.
6) "Spectrum 2," Tremco, Inc.

b. One-Part, Mildew-Resistant, Silicone Sealant:

1) "Dow Corning 786," Dow Corning Corp.
2) "SCS 1702 Sanitary," General Electric Co.
3) "863 #345 White," Pecora Corp.
4) "Proglaze White," Tremco Corp.
5) "OmniPlus," Sonneborn Building Products Div.

D. Acrylic-Emulsion Sealants: One-part, nonsag, mildew-resistant, paintable complying with ASTM C 834 recommended for exposed applications on interior and protected exterior locations involving joint movement of not more than plus or minus 5 percent.

1. Products: Subject to compliance with requirements, provide one of the following:

a. "Chem-Calk 600," Bostik Construction Products Div.
b. "AC-20," Pecora Corp.
c. "Sonolac," Sonneborn Building Products Div.
d. "Tremco Acrylic Latex 834," Tremco, Inc.

2.3 FIRESTOPPING

A. Fire-Resistant Materials: Materials formulated for use in through-penetration fire-stopping around cables, conduit, pipes, and duct penetrations through fire-rated walls and floors. Materials shall have fire-resistance ratings equal to rating of wall or floor penetrated, and as established by testing identical assemblies in accordance with ASTM E 814, by Underwriters' Laboratories, Inc., or other testing and inspection agency acceptable to authorities having jurisdiction.

B. Products: Subject to compliance with requirements, provide one of the following:

1. Puttys and Sealants

a. "Pensil series," General Electric Co.
b. “FSP Firestop Putty,” Hevi-Duty/Nelson
c. “CLK Firestop Sealant,” Hevi-Duty/Nelson
d. “Flame-Safe FS & FST 900 series,” International Protective Coatings Inc.

2. Pillow Type Products

a. “Firestop Pillow”, Hevi-Duty/Nelson
b. “KBS Sealbag”, International Protective Coatings Inc.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting installation and application of joint sealers. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION FOR JOINT SEALERS AND FIRESTOPPING MATERIALS

A. Surface Cleaning for Joint Sealers and Firestopping Materials: Clean surfaces of joints immediately before applying joint sealers and firestopping materials to comply with recommendations of manufacturer.

B. Apply primer to substrates as recommended by manufacturer. Protect adjacent areas from spillage and migration of primers, using masking tape. Remove tape immediately after tooling without disturbing seal.

3.3 SELECTIVE DEMOLITION

A. General: Demolish, remove, demount, and disconnect abandoned electrical materials and equipment indicated to be removed and not indicated to be salvaged or saved.

B. Materials and Equipment To Be Salvaged: Remove, demount, and disconnect existing electrical materials and equipment indicated to be removed and salvaged, and deliver materials and equipment to the location designated for storage.

1. All electrical equipment designated by drawings or by the owner to be kept, shall be turned over to the Owner at a location on the premises.

C. Disposal and Cleanup: Remove from the site and legally dispose of demolished materials and equipment not indicated to be salvaged. All other material shall be removed off site by the contractor at no additional cost to the owner.

D. Electrical Materials and Equipment: Demolish, remove, demount, and disconnect the following items:

1. Inactive and obsolete raceway systems, controls, and fixtures.

a. Raceways embedded in floors, walls, and ceilings may remain if such materials do not interfere with new installations. Remove materials above accessible ceilings.

2. Perform cutting and patching required for demolition in accordance with Division 01.

3.4 ERECTION OF METAL SUPPORTS AND ANCHORAGE

A. Cut, fit, and place miscellaneous metal fabrications accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.

B. Field Welding: Comply with AWS "Structural Welding Code."

3.5 APPLICATION OF JOINT SEALERS AND FIRESTOPPING MATERIALS

A. General: Comply with joint sealer manufacturers' printed application instructions applicable to products and applications indicated, except where more stringent requirements apply.

1. Comply with recommendations of ASTM C 962 for use of elastomeric joint sealants.

2. Comply with recommendations of ASTM C 790 for use of acrylic-emulsion joint sealants.

B. Tooling: Immediately after sealant application and prior to time shinning or curing begins, tool sealants to form smooth, uniform beads; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

C. Installation of Fire-Stopping Materials: Install firestopping, including forming, packing, and other accessory materials, to fill openings around electrical services penetrating floors and walls, to provide fire-stops with fire-resistance ratings as indicated on architectural drawings for floor or wall assembly in which penetration occurs. Comply with installation requirements established by testing and inspecting agency.

END OF SECTION

SECTION 26 0519 - WIRES AND CABLES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Requirements of the following Division 26 Sections apply to this section:

1. "Basic Electrical Requirements"
2. "Cabinets, Boxes and Enclosures"

1.2 SUMMARY

A. This Section includes wires, cables, and connectors for power, lighting, and related systems rated 600 volts and less.

1.3 SUBMITTALS

A. Product Data for electrical wires, cables and connectors.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with provisions of the following code:

1. NFPA 70 "National Electrical Code."

B. Conform to applicable codes and regulations regarding toxicity of combustion products of insulating materials.

C. UL Compliance: Provide components which are listed and labeled by UL under the following standards.

1. UL Std. 83 Thermoplastic-Insulated Wires and Cables.

D. NEMA/ICEA Compliance: Provide components which comply with the following standards:

1. WC-7 Cross Linked Thermosetting Polyethylene-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.

2. WC-8 Ethylene-Propylene-Rubber-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.

E. IEEE Compliance: Provide components which comply with the following standard.

1. Std. 82 Test procedures for Impulse Voltage Tests on Insulated Conductors.

F. All wire and cable shall conform to the requirements of the National Electrical Code and shall meet all A.S.T.M. Specifications. Wire and cable shall be new, manufactured within one year of date of installation, shall have size, grade of insulation, voltage rating and manufacturer's name permanently marked on the outer covering at intervals not exceeding 24 inches, and shall be delivered in complete coils or reels with identifying size and insulation tag.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Wire and Cable:

   a. American Insulated Wire Corp.
   b. Carol Cable Co. Inc.
   c. Essex Group, Inc.
   d. Rome Cable
   e. Senator Wire and Cable Co.
   f. Southwire Company.
   g. Triangle Wire

2. Connectors for Wires and Cable Conductors:

   a. AMP
   b. 3M Company
   c. O-Z/Gedney Co.
   d. Square D Co.

2.2 WIRES AND CABLES

A. General: Provide wire and cable suitable for the temperature, conditions and location where installed.

B. Conductors: Provide solid conductors for power and lighting circuits no. 10 AWG and smaller. Provide stranded conductors for sizes no. 8 AWG and larger. Minimum size no. 12 AWG for power.

C. Conductor Material: copper conductors with conductivity of not less than 95% at 20 deg. C (68 deg. F).

D. Insulation: Provide THHN/THWN insulation for all conductors size no. 8 AWG and

smaller. For all other sizes provide THHN/THWN or XHHW insulation as appropriate for the locations where installed.

E. Color Coding for phase identification in accordance with Table 1 in Part 3 below.

F. Jackets: Factory-applied nylon or PVC external jacketed wires and cables for pulls in raceways over 100-feet in length, for pulls in raceways with more than three equivalent 90 deg. bends, for pulls in conduits underground or under slabs on grade, and where indicated.

2.3 CONNECTORS FOR CONDUCTORS

A. Provide UL-listed factory-fabricated, solderless metal connectors of sizes, ampacity ratings, materials, types and classes for applications and for services indicated. Use connectors with temperature ratings equal to or greater than those of the wires upon which used.

PART 3 EXECUTION

3.1 WIRING METHOD

A. Use the following wiring methods as indicated:

1. Wire: install all wire in raceway.

2. Metal Clad Cable, Type MC: for wiring in gypsum board partitions and for connections from raceway outlet boxes to lighting fixtures.

   A. All 120V and 277V single-phase branch circuits shall have a dedicated full sized neutral conductor. The sharing of the neutral conductor for single-phase loads on a three-phase system is not allowed. Multiple phase and neutral conductors in MC Cable is to be derated per NEC for the number of current carrying conductors in a single cable.

   B. All new Fire Alarm loop wiring (wiring to multiple devices per large area) shall be in conduit and wire. MC Cable shall only be used for concealed wiring from the main loop to a device.

3.2 INSTALLATION OF WIRES AND CABLES

A. General: Install electrical cables, wires, and connectors in compliance with NEC.

B. Coordinate cable installation with other Work.

C. Pull conductors simultaneously where more than one is being installed in same raceway. Use UL listed pulling compound or lubricant, where necessary.

D. Use pulling means including, fish tape, cable, rope, and basket weave wire/cable grips which will not damage cables or raceways. Do not use rope hitches for pulling attachment to wire or cable.

E. Conceal all cable in finished spaces.

F. Install exposed cable parallel and perpendicular to surfaces or exposed structural members, and follow surface contours, where possible.

G. Keep conductor splices to minimum.

H. Install splice and tap connectors which possess equivalent or better mechanical strength and insulation rating than conductors being spliced.

I. Use splice and tap connectors which are compatible with conductor material.

J. Provide adequate length of conductors within electrical enclosures and train the conductors to terminal points with no excess. Bundle multiple conductors, with conductors larger than no 10 AWG cabled in individual circuits. Make terminations so there is no bare conductor at the terminal.

K. Tighten electrical connectors and terminals, including screws and bolts, in accordance with manufacturer's published torque tightening values. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL 486A.

L. All single phase branch circuits shall be wired with dedicated full sized neutral conductor. The use of shared neutrals is not allowed.

3.3 FIELD QUALITY CONTROL

A. The Electrical Contractor shall furnish all test equipment and labor necessary to perform insulation tests as specified herein.

B. Test all wiring set under this Section using an approved type constant "megger". Leave name free from any grounds, crosses, shorts, etc., and leave all materials and apparatus in first class working condition. All wires that are shorted or unintentionally grounded shall be replaced at no additional costs.

C. The Contractor shall megger and record all 600 volt insulated conductors size #2 AWG and larger using Contractor furnished 500 volt megger for one minute. Disconnect motors and transformers during tests. Make tests on circuits isolated from source and load. Submit three (3) sets of cable test results to Engineer for review.

D. Make any additional tests required by the Owner, Engineer or any authorities having jurisdiction.

E. Subsequent to wire and cable hook-ups, energize circuits and demonstrate proper

functioning. Correct malfunctioning units, and retest to demonstrate compliance.

F. TABLE 1: Color Coding for Phase Identification:

1. Color code secondary service, feeder, and branch circuit conductors with factory applied color as follows:

208Y/120 Volts	Phase	480Y/277 Volts
Black	A	Brown
Red	B	Orange
Blue	C	Yellow
White	Neutral	White
Green	Ground	Green

END OF SECTION

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SECTION 26 0526 - GROUNDING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes solid grounding of electrical systems and equipment. It includes basic requirements for grounding for protection of life, equipment, circuits, and systems. Grounding requirements specified in this Section may be supplemented in other sections of these Specifications.

B. Requirements of the following Division 26 sections apply to this section:

1. “Basic Electrical Materials and Methods”
2. “Wires and Cables”
3. “Raceways”

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 01 Specification Sections.

1. Product data for ground rods, connectors and connection materials, and grounding fittings.

1.4 QUALITY ASSURANCE

A. Listing and Labeling: Provide products specified in this Section that are listed and labeled. The terms "listed" and "labeled" shall be defined as they are in the National Electrical Code, Article 100.

B. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" (NRTL) as defined in OSHA Regulation 1910.7.

C. Electrical Component Standard: Components and installation shall comply with NFPA 70, "National Electrical Code" (NEC).

D. Comply with UL Standards:

1. UL 467, "Grounding and Bonding Equipment."
2. UL 869, “Electrical Service Equipment.”
3. UL 486A, “Wire Connectors and Soldering Lugs for Use with Copper Conductors.”

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by the following:

1. A.B. Chance Co.
2. Erico Products, Inc.
3. Galvan Industries, Inc.
4. GB Electrical, Inc.
5. Ideal Industries, Inc.
6. Kearney.
7. Lyncole XIT Grounding.
8. McGill Electrical Products Group.
9. O-Z/Gedney.
10. Raco, Inc.
11. Thomas & Betts Corp.
12. W.H. Salisbury & Co.
13. Utilco Co.

2.2 GROUNDING AND BONDING PRODUCTS

A. Products: Product types indicated, sizes and ratings shall comply with NEC. Where types, sizes, ratings, and quantities indicated are in excess of NEC requirements, the more stringent requirements and the greater size, rating, and quantity indications govern. All products shall comply with NEC, UL, and IEEE requirements.

B. Conductor Materials: Copper.

2.3 WIRE AND CABLE CONDUCTORS

A. General: Comply with Division 26 Section "Wires and Cables." Conform to NEC Chapter 9 Table 8, except as otherwise indicated, for conductor properties, including stranding.

B. Equipment Grounding Conductor: Green insulated.

C. Grounding Electrode Conductor: Stranded cable.

D. Bare Copper Conductors: Conform to the following:

1. Solid Conductors: ASTM B-3.
2. Assembly of Stranded Conductors: ASTM B-8.
3. Tinned Conductors: ASTM B-33.

2.4 MISCELLANEOUS CONDUCTORS

A. Ground Bus: Bare annealed copper bars of rectangular cross section.

B. Braided Bonding Jumpers: Copper tape, braided No. 30 gauge bare copper wire, terminated with copper ferrules.

C. Bonding Strap Conductor/Connectors: Soft copper, 0.05 inch thick and 2 inches wide, except as indicated.

2.5 CONNECTOR PRODUCTS

A. General: Listed and labeled as grounding connectors for the materials used.

B. Pressure Connectors: High-conductivity-plated units.

C. Bolted Clamps: Heavy-duty units listed for the application.

D. Exothermic Welded Connections: Provided in kit form and selected for the specific types, sizes, and combinations of conductors and other items to be connected.

E. Electrical Grounding Connection Accessories: Electrical insulating tape, heat-shrinkable insulating tubing, welding materials.

PART 3 - EXECUTION

3.1 APPLICATION

A. Equipment Grounding Conductor Application: Comply with NEC Article 250 for sizes and quantities of equipment grounding conductors, except where larger sizes or more conductors are indicated.

B. Install separate insulated equipment grounding conductors with circuit conductors in all raceway systems.

C. Underground Conductors: Bare, stranded copper except as otherwise indicated.

D. Signal and Communications: For telephone, alarm, and communication systems, provide a #4 AWG minimum green insulated copper conductor in raceway from the grounding electrode system to each terminal cabinet or central equipment location.

E. Separately derived systems required by NEC to be grounded shall be grounded in accordance with NEC paragraph 250-30.

3.2 INSTALLATION

A. General: Ground electrical systems and equipment in accordance with NEC requirements except where the Drawings or Specifications exceed NEC requirements.

B. Electrical Room Ground Bus: Size, location, and arrangement as indicated. Space 1 inch from wall and support from wall 6 inches above finished floor, except as otherwise indicated.

C. Braided-Type Bonding Jumpers: Install to connect ground clamps on water meter piping to bypass water meters electrically. Use elsewhere for flexible bonding and grounding connections.

D. Route grounding conductors along the shortest and straightest paths possible without obstructing access or placing conductors where they may be subjected to strain, impact, or damage, except as indicated.

E. Bond interior metal piping systems and metal air ducts to equipment ground conductors of pumps, fans, electric heaters, and air cleaners serving individual systems.

3.3 CONNECTIONS

A. General: Make connections in such a manner as to minimize possibility of galvanic action or electrolysis. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.

B. Use electroplated or hot-tin-coated materials to assure high conductivity and make contact points closer in order of galvanic series.

C. Make connections with clean bare metal at points of contact.

D. Aluminum to steel connections shall be with stainless steel separators and mechanical clamps.

E. Aluminum to galvanized steel connections shall be with tin-plated copper jumpers and mechanical clamps.

F. Coat and seal connections involving dissimilar metals with anti-oxidation compound to prevent future penetration of moisture to contact surfaces.

G. Exothermic Welded Connections: Use for connections to structural steel and for underground connections except those at test wells. Install at connections to ground rods and plate electrodes. Comply with manufacturer's written recommendations. Welds that are puffed up or that show convex surfaces indicating improper cleaning are not acceptable.

H. Terminate insulated equipment grounding conductors for feeders and branch circuits with pressure-type grounding lugs. Where metallic raceways terminate at metallic housings without mechanical and electrical connection to the housing, terminate each conduit with a grounding bushing. Connect grounding bushings with a bare grounding conductor to the ground bus in the housing. Bond electrically noncontinuous conduits at both entrances and exits with grounding bushings and bare grounding conductors.

I. Compression-Type Connections: Use hydraulic compression tools to provide the correct circumferential pressure for compression connectors. Use tools and dies recommended

by the manufacturer of the connectors. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on the ground conductor.

3.4 FIELD QUALITY CONTROL

A. Tests: Subject the completed grounding system to a megger test at each location where a maximum ground resistance level is specified, at service disconnect enclosure ground terminal, and at ground test wells. Measure ground resistance without the soil being moistened by any means other than natural precipitation or natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance. Perform tests by the 2-point method in accordance with Section 9.03 of IEEE 81, "Guide for Measuring Earth Resistivity, Ground Impedance and Earth Surface Potentials of a Grounding System."

B. Ground/resistance maximum values shall be as follows:

1. Equipment rated 500 kVA and less: 10 Ohms
2. Equipment rated 500 kVA to 1000 kVA: 5 Ohms
3. Equipment rated over 1000 kVA: 3 Ohms
4. Unfenced substations and pad-mounted equipment: 5 Ohms
5. Manhole grounds: 10 Ohms

C. Deficiencies: Where ground resistances exceed specified values, and if directed, modify the grounding system to reduce resistance values. Where measures are directed that exceed those indicated the provisions of the Contract, covering changes will apply.

D. Report: Prepare test reports, certified by the testing organization, of the ground resistance at each test location. Include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results.

END OF SECTION

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SECTION 26 0529 - SUPPORTING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Requirements of the following Division 26 Sections apply to this section:

1. "Basic Electrical Requirements"

2. "Basic Electrical Materials and Methods"

3. Refer to other Division 26 sections for additional specific support requirements that may be applicable to specific items.

1.2 SUMMARY

A. This Section includes secure support from the building structure for electrical items by means of hangers, supports, anchors, sleeves, inserts, seals, and associated fastenings.

1.3 QUALITY ASSURANCE

A. Electrical Component Standard: Components and installation shall comply with NFPA 70 "National Electrical Code."

B. Electrical components shall be listed and labeled by UL, ETL, CSA, or other approved, nationally recognized testing and listing agency.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by the following:

1. Slotted Metal Angle and U-Channel Systems:

a. Allied Tube & Conduit
b. B-Line Systems, Inc.
c. Cinch Clamp Co., Inc.
d. GS Metals Corp.
e. Haydon Corp.
f. Unistrut Corp.

2. Conduit Sealing Bushings:

   a. Bridgeport Fittings, Inc.
   b. Cooper Industries, Inc.
   c. GS Metals Corp.
   d. Killark Electric Mfg. Co.
   e. Madison Equipment Co.
   f. L.E. Mason/Red Dot Div.
   g. O-Z/Gedney
   h. Producto Electric Corp.
   i. Raco, Inc.
   j. Red Seal Electric Corp.
   k. Spring City Electrical Mgf. Co.
   l. Thomas & Betts Corp.

2.2 COATINGS

A. Coating: Supports, support hardware, and fasteners shall be protected with zinc coating or with treatment of equivalent corrosion resistance using approved alternative treatment, finish, or inherent material characteristic. Products for use outdoors shall be hot-dip galvanized.

2.3 MANUFACTURED SUPPORTING DEVICES

A. Raceway Supports: Clevis hangers, riser clamps, conduit straps, threaded C-clamps with retainers, ceiling trapeze hangers, wall brackets, and spring steel clamps.

B. Fasteners: Types, materials, and construction features as follows:

   1. Expansion Anchors: Carbon steel wedge or sleeve type.

   2. Toggle Bolts: All steel springhead type.

   3. Powder-Driven Threaded Studs: Heat-treated steel, designed specifically for the intended service.

C. Conduit Sealing Bushings: Factory-fabricated watertight conduit sealing bushing assemblies suitable for sealing around conduit or sleeves passing through concrete floors and walls where one or both sides of the floor or wall is an unconditioned space. Construct seals with steel sleeve, malleable iron body, neoprene sealing grommets or rings, metal pressure rings, pressure clamps, and cap screws.

D. U-Channel Systems: 16-gauge steel channels, with 9/16-inch-diameter holes, at a minimum of 8 inches on center, in top surface. Provide fittings and accessories that mate and match with U-channel and are of the same manufacture.

   1. U-Channel steel channel systems installed in unconditioned spaces shall be stainless steel or PVC coated.

2.4 FABRICATED SUPPORTING DEVICES

A. General: Shop- or field-fabricated supports or manufactured supports assembled from U-channel components.

B. Steel Brackets: Fabricated of angles, channels, and other standard structural shapes. Connect with welds and machine bolts to form rigid supports.

C. Pipe Sleeves: Provide pipe sleeves of one of the following:

1. Sheet Metal: Fabricate from galvanized sheet metal; round tube closed with snaplock joint, welded spiral seams, or welded longitudinal joint. Fabricate sleeves from the following gage metal for sleeve diameter noted:

   a. 3-inch and smaller: 20-gage
   b. 4-inch to 6-inch: 16-gage
   c. over 6-inch: 14-gage

2. Steel Pipe: Fabricate from Schedule 40 galvanized steel pipe.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install supporting devices to fasten electrical components securely and permanently in accordance with NEC requirements.

B. Coordinate with the building structural system and with other electrical installation.

C. Raceway Supports: Comply with the NEC and the following requirements:

1. Conform to manufacturer's recommendations for selection and installation of supports.

2. Strength of each support shall be adequate to carry present and future load multiplied by a safety factor of at least four. Where this determination results in a safety allowance of less than 200 lbs, provide additional strength until there is a minimum of 200 lbs safety allowance in the strength of each support.

3. Install individual and multiple (trapeze) raceway hangers and riser clamps as necessary to support raceways. Provide U-bolts, clamps, attachments, and other hardware necessary for hanger assembly and for securing hanger rods and conduits.

4. Support parallel runs of horizontal raceways together on trapeze-type hangers.

5. Support individual horizontal raceways by separate pipe hangers. Spring steel

fasteners may be used in lieu of hangers only for 1-1/2-inch and smaller raceways serving lighting and receptacle branch circuits above suspended ceilings only. For hanger rods with spring steel fasteners, use ¼-inch-diameter or larger threaded steel. Use spring steel fasteners that are specifically designed for supporting single conduits or tubing.

6. Space supports for raceways in accordance with the NEC.

7. Support exposed and concealed raceway within 1 foot of an unsupported box and access fittings. In horizontal runs, support at the box and access fittings may be omitted where box or access fittings are independently supported and raceway terminals are not made with chase nipples or threadless box connectors.

D. Miscellaneous Supports: Support miscellaneous electrical components as required to produce the same structural safety factors as specified for raceway supports. Install metal channel racks for mounting cabinets, panelboards, disconnects, control enclosures, pull boxes, junction boxes, transformers, and other devices.

E. In open overhead spaces, cast boxes threaded to raceways need not be supported separately except where used for fixture support; support sheet metal boxes directly from the building structure or by bar hangers. Where bar hangers are used, attach the bar to raceways on opposite sides of the box and support the raceway with an approved type of fastener not more than 24 inches from the box.

F. Fastening: Unless otherwise indicated, fasten electrical items and their supporting hardware securely to the building structure, including but not limited to conduits, raceways, cables, cable trays, busways, cabinets, panelboards, transformers, boxes, disconnect switches, and control components in accordance with the following:

1. Fasten by means of wood screws or screw-type nails on wood, toggle bolts on hollow masonry units, concrete inserts or expansion bolts on concrete or solid masonry, and machine screws, welded threaded studs, or spring-tension clamps on steel. Threaded studs driven by a powder charge and provided with lock washers and nuts may be used instead of expansion bolts and machine or wood screws. Do not weld conduit, pipe straps, or items other than threaded studs to steel structures. In partitions of light steel construction, use sheet metal screws.

2. Holes cut to depth of more than 1-1/2 inches in reinforced concrete beams or to depth of more than 3/4 inch in concrete shall not cut the main reinforcing bars. Fill holes that are not used.

3. Ensure that the load applied to any fastener does not exceed 25 percent of the proof test load. Use vibration- and shock-resistant fasteners for attachments to concrete slabs.

END OF SECTION

SECTION 26 0533 - RACEWAYS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Requirements of the following Division 26 Sections apply to this Section:

1. "Basic Electrical Requirements"
2. "Basic Electrical Materials and Methods"
3. "Supporting Devices" for raceway supports

1.2 SUMMARY

A. This Section includes raceways for electrical wiring. Types of raceways in this section include the following:

1. Electrical metallic tubing.
2. Flexible metal conduit.
3. Intermediate metal conduit.
4. Liquid tight flexible conduit.
5. Rigid metal conduit.
6. Rigid nonmetallic conduit.
7. PVC externally coated rigid steel conduit.
8. Surface raceways.
9. Wireway.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 01 Specification Sections.

1. Product Data for the following products:

a. Surface raceway and fittings.
b. Wireway and fittings.

1.4 QUALITY ASSURANCE

A. Electrical Component Standard: Components and installation shall comply with NFPA 70 "National Electrical Code."

B. NEMA Compliance: Comply with applicable requirements of NEMA standards pertaining to raceways.

C. UL Compliance and Labeling: Comply with applicable requirements of UL standards pertaining to electrical raceway systems. Provide raceway products and components listed and labeled by UL, ETL, or CSA.

1.5 SEQUENCING AND SCHEDULING

A. Coordinate with other Work, including metal and concrete deck installation, as necessary to interface installation of electrical raceways and components with other Work.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by the following:

1. Conduit:

   a. Allied Tube & Conduit Co.
   b. LTV Steel
   c. Robroy Inc.
   d. Triangle PWC, Inc.
   e. Wheatland Tube Co.

2. Conduit Bodies:

   a. Adalet-PLM
   b. Appleton Electric Co.
   c. Crouse-Hinds Division, Cooper Industries, Inc.
   d. Killark Electric Mfg. Co.
   e. O-Z/Gedney
   f. Spring City Electrical Mfg. Co.

3. Wireway:

   a. Anchor Electric Co.
   b. Circle AW Products.
   c. Cross Brothers, Inc.
   d. Erickson Electric Equipment Co.
   e. GS Metals Corp.
   f. Hoffman Engineering Co.
   g. Square D Co.

4. Surface Raceway:

   a. Carlon, Inc.
   b. Hubbell Co.
   c. The Wiremold Co.

2.2 METAL CONDUIT AND TUBING

A. General: Minimum conduit size shall be 3/4" for interior installation and 1" for exterior underground installations.

B. Rigid Steel Conduit: ANSI C80.1.

C. Intermediate Steel Conduit: UL 1242.

D. Electrical Metallic Tubing: ANSI C80.3.

E. PVC Externally Coated Rigid Steel Conduit: ANSI C80.1 and NEMA RN 1.

F. Flexible Metal Conduit: UL 1, zinc-coated steel.

G. Liquidtight Flexible Metal Conduit: UL 360.

2.3 NONMETALLIC CONDUIT AND DUCTS

A. General: Minimum conduit size shall be 3/4" for interior and exterior installations.

B. Electrical Nonmetallic Tubing: NEMA TC 13.

C. Rigid Nonmetallic Conduit: NEMA TC 2 and UL 651, Schedule 40 or 80 PVC.

D. Liquidtight Flexible Nonmetallic Conduit: UL 1660.

2.4 CONDUIT BODIES

A. General: Types, shapes, and sizes as required to suit individual applications, NEC requirements and NEC bending radius. Provide matching gasketed covers secured with corrosion-resistant screws.

B. Metallic Conduit and Tubing: Use metallic conduit bodies. Use bodies with threaded hubs for threaded raceways. Conduit bodies used with rigid metal conduit shall have malleable iron bodies and stamped steel covers. Use gaskets in all damp and wet locations. Conduit bodies shall have threaded hubs. Conduit bodies shall be standard type for 2 inch size and under, long body type for sizes over 2 inches.

C. Nonmetallic Conduit and Tubing: Use nonmetallic conduit bodies conforming to UL 514 B.

2.5 CONNECTORS AND FITTINGS

A. Of indicated types, sizes, and NEMA classes. Where not indicated, provide units of types, sizes, and classes appropriate for the use and location. Provide all items complete

with accessories required for the intended use. Provide gaskets for units in damp or wet locations. All connectors and fittings shall comply with applicable provisions of NEC Article 314 and be listed for their intended use. Furnish and install raceway expansion fittings at all building expansion joints, where indicated on the architectural drawings.

1. Metal Conduit: Termination for threaded conduit shall be double locknut with bushings. Use watertight type locknut in all damp or wet locations. Bushings shall be plastic or insulated metal.

2. Electrical Metal Tubing: Connectors and couplings shall be die-cast set screw type for conduit over 1" diameter and compression type for conduit 1" and smaller.

3. Flexible Metal Conduit: Anti-short bushings shall be installed at all ends of flexible metal conduit.

4. Rigid Nonmetallic Conduit: Fittings shall meet NEMA TC 3 requirements.

2.6 WIREWAYS

A. General: Electrical wireways shall be of types, sizes, and number of channels as indicated. Fittings and accessories including but not limited to couplings, offsets, elbows, expansion joints, adapters, hold-down straps, and end caps shall match and mate with wireway as required for complete system. Where features are not indicated, select to fulfill wiring requirements and comply with applicable provisions of NEC.

B. Wireway covers shall be hinged type, unless otherwise noted.

2.7 SURFACE RACEWAYS

A. General: Sizes and channels as indicated. Provide fittings that match and mate with raceway. Raceways shall comply with applicable UL 5 requirements.

B. Surface Metal Raceway: Construct of galvanized steel with removable covers. Finish with manufacturer's standard prime coating suitable for painting. Provide raceways of types suitable for each application and all required components for a complete system.

1. Wiremold - 2100, 3000, 4000 or 6000 series.

C. Surface Single Channel Raceway: Low-profile single channel metallic or non-metallic raceway with base and removable cover furnished as a preassembled unit.

1. Wiremold - V200, V500 or V700 series.
2. Hubbell - Media Track MT1, MT3 or MT4 series.
3. Carlon - SC series.

PART 3 – EXECUTION

3.1 WIRING METHOD

A. Outdoors: Use the following wiring methods:

1. Exposed: rigid non-metallic Schedule 40 PVC conduit.

2. Connection to Vibrating Equipment: Including transformers and hydraulic, pneumatic, or electric solenoid or motor-driven equipment: Liquid tight flexible metal conduit.

B. Indoors: Use the following wiring methods:

1. Connection to Vibrating Equipment in Dry Locations: Including transformers and hydraulic, pneumatic or electric solenoid or motor-operated equipment: flexible metal conduit.

2. Connection to vibrating equipment and hydraulic, pneumatic, or electric solenoid or motor-driven equipment in moist or humid location or corrosive atmosphere, or where subject to water spray or dripping oil, grease, or water: Liquidtight flexible metal conduit.

3. Exposed:

a. In dry spaces: electrical metallic tubing, unless otherwise noted.
b. In wet or damp spaces: rigid galvanized steel conduit .

4. Concealed: electrical metallic tubing.

3.2 INSTALLATION

A. General: Install electrical raceways in accordance with manufacturer's written installation instructions and applicable requirements of NEC.

B. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot water pipes. Install raceways level and square and at proper elevations.

C. Elevation of Raceway: Install horizontal raceway runs above water and steam piping.

D. Provide supports for raceways as specified elsewhere in Division 26.

E. Prevent foreign matter from entering raceways by using temporary closure protection.

F. Protect stub-ups from damage where conduits rise from floor slabs. Arrange so curved portion of bends is not visible above the finished slab.

1. Where non-metallic conduits rise through concrete slabs in unconditioned

spaces, the raceway shall pass through a PVC coated steel sleeve. Refer to drawings for sleeve length requirements.

G. Make bends and offsets so the inside diameter is not effectively reduced. Unless otherwise indicated, keep the legs of a bend in the same plane and the straight legs of offsets parallel.

H. Run raceways with a minimum of bends in the shortest practical distance considering the type of building construction and obstructions except as otherwise indicated.

I. Install exposed raceways parallel and perpendicular to nearby surfaces or structural members and follow the surface contours as much as practical. Run exposed, parallel, or banked raceways together. Make bends in parallel or banked runs from the same center line so that the bends are parallel. Factory elbows may be used in banked runs only where they can be installed parallel. This requires that there be a change in the plane of the run such as from wall to ceiling and that the raceways be of the same size. In other cases provide field bends for parallel raceways.

J. Join raceways with fittings designed and approved for the purpose and make joints tight. Where joints cannot be made tight, use bonding jumpers to provide electrical continuity of the raceway system. Make raceway terminations tight. Where terminations are subject to vibration, use bonding bushings to assure electrical continuity. Where subject to vibration or dampness, use insulating bushings to protect conductors.

K. Prior to locating and installing conduits, check the Contract Drawings and the work of other trades to be sure that the locations of all conduits and boxes will not interfere with the work of other trades and that conduit stubs for motors and equipment will be placed in proper locations.

L. There shall be separate raceway systems for all voltages and system types. All wiring shall be in raceway systems.

M. Holes through existing concrete walls, for conduit installation, shall be made with a core drill.

N. All raceways penetrating walls shall be sealed on both sides with approved sealant material.

O. Hanger rods for supporting raceway shall be all-thread galvanized rod. Minimum size rod shall be 1/4 inch, use larger rods where required for supporting loads heavier then recommended for 1/4 inch rods.

P. Raceways shall be fastened with malleable iron beam clamps or stamped steel or malleable iron one-hole straps, or “minerallac” type conduit hangers. Spring steel fasteners as manufactured by Cady or approved equal, may be used in stud walls and above ceilings.

Q. Perforated strap hangers are not permitted.

R. Raceways fastened directly to concrete, brick or block walls or concrete ceiling in unheated spaces shall be Schedule 40 PVC conduit and shall be rigidly secured by means of proper size machine screws, or bolts, and lead expansion type shields. Plastic or fiber expansion shields are not permitted. Toggle bolts may be used with hollow concrete blocks. Raceways fastened to concrete in unconditioned spaces shall:

1. Utilize stainless steel two-hole conduit straps with stainless steel fasteners. Single hole conduit straps shall not be permitted.

2. Fasteners shall be spaced no more than 24 inches on-center for horizontally run conduit, 12 inches on center for for vertically run conduit, and no more than 12 inches from boxes or fittings.

S. Expansion fittings: provide expansion fittings where:

1. Conduits cross an expansion joint.

2. Straight length of runs of conduit exceed 20 feet. No more than 20 feet of PVC pipe shall be installed in a straight line without an expansion fitting.

T. Terminations: Where raceways are terminated with locknuts and bushings, align the raceway to enter squarely and install the locknuts with dished part against the box. Where terminations cannot be made secure with one locknut, use two locknuts, one inside and one outside the box.

U. Where terminating in threaded hubs, screw the raceway or fitting tight into the hub so the end bears against the wire protection shoulder. Where chase nipples are used, align the raceway so the coupling is square to the box, and tighten the chase nipple so no threads are exposed.

V. Install pull wires in empty raceways. Use no. 14 AWG wire or monofilament plastic line having not less than 200-lb tensile strength. Leave not less than 12 inches of slack at each end of the pull wire.

W. Install raceway sealing fittings in accordance with the manufacturer's written instructions. Locate fittings at suitable, approved, accessible locations and fill them with UL-listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points and elsewhere as indicated:

1. Where conduits enter or leave hazardous locations.

2. Where conduits pass from warm locations to cold locations, such as the boundaries of refrigerated spaces and air-conditioned spaces.

3. Where required by the NEC.

X. Stub-up Connections: Extend conduits through concrete floor for connection to

freestanding equipment with an adjustable top or coupling threaded inside for plugs and set flush with the finished floor. Extend conductors to equipment with rigid steel conduit; flexible metal conduit may be used 6 inches above the floor. Where equipment connections are not made under this contract, install removable flush plugs flush with floor.

Y. Flexible Connections: Use short length (maximum of 6 ft.) of flexible conduit for recessed and semirecessed lighting fixtures, for equipment subject to vibration, noise transmission, or movement; and for all motors. Install separate ground conductor across flexible connections.

Z. Surface Metal Raceway: Install a separate green ground conductor in raceway from the junction box supplying the raceway to receptacle or fixture ground terminals.

AA. Do not install aluminum conduit embedded in or in contact with concrete.

BB. PVC externally coated rigid steel conduit: Patch all nicks and scrapes in PVC coating after installing conduit.

CC. Select each surface metal raceway outlet box to which a lighting fixture is attached to be of sufficient diameter to provide a seat for the fixture canopy.

DD. Where a surface metal raceway is used to supply a fluorescent lighting fixture having central stem suspension with a backplate and a canopy, with or without extension ring, the backplate and canopy will serve as the outlet box and no separate outlet box need be provided.

EE. Provide surface metal raceway outlet box, in addition to the backplate and canopy, at the feed-in location of each fluorescent lighting fixture having end stem suspension.

FF. Where a surface metal raceway extension is made from an existing outlet box on which a lighting fixture is installed, provide a backplate slightly smaller than the fixture canopy, and no additional surface mounted outlet box need be installed.

3.3 ADJUSTING AND CLEANING

A. Upon completion of installation of raceways, inspect interiors of raceways; clear all blockages and remove burrs, dirt, and construction debris.

END OF SECTION 260533

SECTION 26 0553 - ELECTRICAL IDENTIFICATION

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Requirements of the following Division 26 Sections apply to this section:

1. "Basic Electrical Requirements"
2. "Basic Electrical Materials and Methods"

1.2 SUMMARY

A. This Section includes identification of electrical materials, equipment, and installations. It includes requirements for electrical identification components including but not limited to the following:

1. Identification labeling for cables and conductors.
2. Operational instruction signs.
3. Warning and caution signs.
4. Equipment labels and signs.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 26 Section "Wires and Cables" for requirements for color coding of conductors for phase identification.

C. Refer to other Division 26 sections for additional specific electrical identification associated with specific items.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 01 Specification Sections.

B. Product Data for each type of product specified.

C. Schedule of identification nomenclature to be used for identification signs and labels.

D. Samples of each color, lettering style, and other graphic representation required for identification materials; samples of labels and signs.

1.4 QUALITY ASSURANCE

A. Electrical Component Standard: Components and installation shall comply with NFPA 70 "National Electrical Code."

B. ANSI Compliance: Comply with requirements of ANSI Standard A13.1, "Scheme for the Identification of Piping Systems," with regard to type and size of lettering for raceway and cable labels.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:

1. American Labelmark Co.
2. Ideal Industries, Inc.
3. LEM Products, Inc.
4. Markal Corp.
5. Panduit Corp.
6. Seton Name Plate Co.
7. Standard Signs, Inc.
8. W.H.Brady, Co.

2.2 ELECTRICAL IDENTIFICATION PRODUCTS

A. Wire/Cable Designation Tape Markers: Vinyl or vinyl-cloth, self-adhesive, wraparound, cable/conductor markers with preprinted numbers and letter.

B. Plasticized Card Stock Tags: Vinyl cloth with preprinted and field-printed legends to suit the application. Orange background, except as otherwise indicated, with Eyelet for fastener.

C. Engraved, Plastic-Laminated Labels, Signs, and Instruction Plates: Engraving stock melamine plastic laminate, 1/16-inch minimum thick and 3 inches in length; 1/8-inch thick for larger sizes. Engraved legend in white letters on black face and punched for mechanical fasteners.

D. Baked-Enamel Warning and Caution Signs for Interior Use:

1. Preprinted aluminum signs, punched for fasteners, with colors, legend, and size appropriate to the location.

E. Exterior Metal-Backed Butyrate Warning and Caution Signs: Weather-resistant, nonfading, preprinted cellulose acetate butyrate signs with 20-gage, galvanized steel backing, with colors, legend, and size appropriate to the location. Provide 1/4-inch grommets in corners for mounting.

F. Fasteners for Plastic-Laminated and Metal Signs: Self- tapping stainless steel screws or number 10/32 stainless steel machine screws with nuts and flat and lock washers.

G. Cable Ties: Fungus-inert, self-extinguishing, one-piece, self-locking nylon cable ties, 0.18-inch minimum width, 50-lb minimum tensile strength, and suitable for a temperature range from minus 50 deg F to 350 deg F. Provide ties in specified colors when used for color coding.

PART 3 EXECUTION

3.1 INSTALLATION

A. Lettering and Graphics: Coordinate names, abbreviations, colors, and other designations used in electrical identification work with corresponding designations specified or indicated. Install numbers, lettering, and colors as approved in submittals and as required by code.

B. Install identification devices in accordance with manufacturer's written instructions and requirements of NEC.

C. Sequence of Work: Where identification is to be applied to surfaces that require finish, install identification after completion of finish work.

D. Identify Junction, Pull, and Connection Boxes: Code-required caution sign for boxes shall be pressure-sensitive, self- adhesive label indicating system voltage in black, preprinted on orange background. Install on outside of box cover. Also label box covers with identity of contained circuits. Use pressure-sensitive plastic labels at exposed locations and similar labels or plasticized card stock tags at concealed boxes

1. Pull boxes and junction boxes used for fire alarm wiring shall be red.

E. The following field-applied color-coding methods may be used in lieu of factory-coded wire for sizes larger than No. 10 AWG.

1. Apply colored, pressure-sensitive plastic tape in half-lapped turns for a distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply the last two laps of tape with no tension to prevent possible unwinding. Use 1-inch-wide tape in colors as specified. Do not obliterate cable identification markings by taping. Tape locations may be adjusted slightly to prevent such obliteration.

2. In lieu of pressure-sensitive tape, colored cable ties may be used for color identification. Apply three ties of specified color to each wire at each terminal or splice point starting 3 inches from the terminal and spaced 3 inches apart. Apply with a special tool or pliers, tighten for snug fit, and cut off excess length.

F. Tag or label conductors as follows:

1. Future Connections: Conductors indicated to be for future connection or connection under another contract with identification indicating source and

circuit numbers.

2. Multiple Circuits: Where multiple branch circuits or control wiring or communications/signal conductors are present in the same box or enclosure (except for three- circuit, four-wire home runs), label each conductor or cable. Provide legend indicating source, voltage, circuit number, and phase for branch circuit wiring. Phase and voltage of branch circuit wiring may be indicated by mean of coded color of conductor insulation. For control and communications/signal wiring, use color coding or wire/cable marking tape at terminations and at intermediate locations where conductors appear in wiring boxes, troughs, and control cabinets. Use consistent letter/number conductor designations throughout on wire/cable marking tapes.

3. Match identification markings with designations used in panelboards shop drawings, Contract Documents, and similar previously established identification schemes for the facility's electrical installations.

G. Install equipment/system circuit/device identification as follows:

1. Apply equipment identification labels of engraved plastic- laminate on each major unit of electrical equipment provided Provide singleline of text, with 1/2-inch-high lettering on 1-1/2-inch-high label (2-inch-high where two lines are required), white lettering in black field. Text shall match terminology and numbering of the Contract Documents and shop drawings. Apply labels for each unit of the following categories of electrical equipment.

   a. Electrical cabinets, and enclosures.
   b. Disconnect Switches
   c. Pushbutton stations.
   d. Contactors.
   e. Remote-controlled switches.
   f. Control devices.

2. Apply circuit/control/item designation labels of engraved plastic laminate for disconnect switches, breakers, pushbuttons, pilot lights, motor control centers, and similar items for power distribution and control components above.

3. Install labels at locations indicated and at locations for best convenience of viewing without interference with operation and maintenance of equipment.

END OF SECTION 260553

SECTION 26 2716 - CABINETS, BOXES, AND ENCLOSURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Requirements of the following Division 26 Sections apply to this section:

1. "Basic Electrical Requirements"
2. "Basic Electrical Materials and Methods"
3. "Raceways" for conduit body type electrical enclosures

1.2 SUMMARY

A. This section includes cabinets, boxes, and enclosures for electrical installations. Types of products specified in this Section include:

1. Outlet and device boxes.
2. Pull and junction boxes.
3. Cabinets.
4. Hinged door enclosures.

1.3 DEFINITIONS

A. Cabinet: An enclosure designed either for surface or for flush mounting and having a frame, or trim in which a door or doors may be mounted.

B. Device Box: An outlet box designed to house a receptacle device or a wiring box designed to house a switch.

C. Enclosure: A box, case, cabinet, or housing for electrical wiring or components.

D. Hinged Door Enclosure: An enclosure designed for surface mounting and having swinging doors or covers secured directly to and telescoping with the walls of the box.

E. Outlet Box: A wiring enclosure where current is taken from a wiring system to supply utilization equipment.

F. Wiring Box: An enclosure designed to provide access to wiring systems or for the mounting of indicating devices or of switches for controlling electrical circuits.

1.4 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 01 Specification Sections:

B. Shop drawings for boxes, enclosures and cabinets that are to be shop fabricated, (nonstock items). For shop fabricated junction and pull boxes, show accurately scaled views and spatial relationships to adjacent equipment. Show box types, dimensions, and finishes.

1.5 QUALITY ASSURANCE

A. UL Listing and Labeling: Items provided under this section shall be listed and labeled by UL.

B. National Electrical Code Compliance: Components and installation shall comply with NFPA 70 "National Electrical Code."

C. NEMA Compliance: Comply with NEMA Standard 250, "Enclosures for Electrical Equipment (1000 Volts Maximum)."

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by the following:

1. Floor Boxes:

   a. Appleton Electric Co.
   b. Cooper Industries, Inc.
   c. General Electric
   d. Hubbell
   e. Raco, Inc.
   f. Steel City
   g. Thomas & Betts Corp.
   h. The Wiremold Company

2. Cabinets:

   a. Electric Panelboard, Inc.
   b. Erickson Electrical Equipment Co.
   c. Hoffman Engineering Co.
   d. Parker Electrical Mfg. Co.
   e. Square D Co.

3. Boxes for Hazardous Locations:

   a. Adalet-PLM.
   b. Cooper Industries, Inc.
   c. Killark Electric Mfg. Co.

d. OZ/Gedney.
e. Robroy Industries, Inc.
f. Thomas & Betts

2.2 CABINETS, BOXES, AND FITTINGS, GENERAL

A. Electrical Cabinets, Boxes, and Fittings: Of indicated types, sizes, and NEMA enclosure classes. Where not indicated, provide units of types, sizes, and classes appropriate for the use and location. Provide all items complete with covers and accessories required for the intended use. Provide gaskets for units in damp or wet locations.

2.3 MATERIALS AND FINISHES

A. Sheet Steel: Flat-rolled, code-gage, galvanized steel.

B. Fasteners for General Use: Corrosion resistant screws and hardware including cadmium and zinc plated items.

C. Fasteners for Damp or Wet Locations: Stainless steel screws and hardware.

D. Cast Metal for Boxes, Enclosures, and Covers; Copper-free aluminum except as otherwise specified.

E. Exterior Finish: Gray baked enamel for items exposed in finished locations except as otherwise indicated.

F. Painted Interior Finish: Where indicated, white baked enamel.

G. Fittings for Boxes, Cabinets, and Enclosures: Conform to UL 514B. Malleable iron or zinc plated steel for conduit hubs, bushings and box connecters.

2.4 METAL OUTLET, DEVICE, AND SMALL WIRING BOXES

A. General: Conform to UL 514A, "Metallic Outlet Boxes, Electrical," and UL 514B, "Fittings for Conduit and Outlet Boxes." Boxes shall be of type, shape, size, and depth to suit each location and application.

B. Steel Boxes: Conform to NEMA OS 1, "Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports." Boxes shall be sheet steel with stamped knockouts, threaded screw holes and accessories suitable for each location including mounting brackets and straps, cable clamps, exterior rings and fixture studs.

C. Cast-Aluminum Boxes: Copper free aluminum threaded raceway entries, and features and accessories suitable for each location including mounting ears, threaded screw holes for devices and closure plugs.

D. Cast-Iron Boxes: Iron alloy, waterproof, with threaded raceway entries and features and accessories suitable for each location, including mounting ears, threaded screw holes for devices and closure plugs.

2.5 NONMETALLIC OUTLET, DEVICE, AND SMALL WIRING BOXES

A. General: Conform to NEMA OS 2, "Nonmetallic Outlet Boxes, Device Boxes, Covers, and Box Supports" and UL 514C, “Nonmetallic Outlet Boxes, Flush Device Boxes and Covers." Boxes shall be molded PVC units of type, shape, size, and depth to suit location and application.

B. Boxes for Concealed Work: Mounting provisions and wiring entrances to suit installation conditions and wiring method used.

C. Boxes for Exposed Work: Ultra violet stabilized, nonconductive, high impact resistant boxes with integrally molded raceway entrance hubs and removable mounting flanges. Boxes shall be equipped with threaded screw holes for device and cover plate mounting. Each box shall have a molded cover of matching PVC material suitable for the application.

2.6 PULL AND JUNCTION BOXES

A. General: Comply with UL 50, "Electrical Cabinets and Boxes", for boxes over 100 cubic inches volume. Boxes shall have screwed or bolted on covers of material same as box and shall be of size and shape to suit application.

B. Steel Boxes: Sheet steel with welded seams. Where necessary to provide a rigid assembly, construct with internal structural steel bracing.

C. Hot-Dipped Galvanized Steel Boxes: Sheet steel with welded seams. Where necessary to provide a rigid assembly, construct with internal structural steel bracing. Hot-dip galvanized after fabrication. Cover shall be gasketed.

D. Stainless-Steel Boxes: Fabricate of stainless steel conforming to Type 302 of ASTM A 167, "Specification for Stainless and Heat Resisting Chromium-Nickel Steel Plate, Sheet, and Strip." Where necessary to provide a rigid assembly, construct with internal structural stainless steel bracing. Cover shall be gasketed.

E. Cast-Aluminum Boxes: Molded of copper free aluminum, with gasketed cover and integral threaded conduit entrances.

F. Cast-Iron Boxes: Molded of cast iron alloy with gasketed cover and integral threaded conduit entrances.

G. Cast Nonmetallic Boxes: Ultra violet stabilized, nonconductive, high impact resistant PVC boxes with gasketed cover and integral mounting flanges.

H. Boxes Approved for Classified Locations: Cast metal or cast nonmetallic boxes conforming to UL 886, "Outlet Boxes and Fittings for Use in Hazardous (Classified) Locations," listed and labeled for use in the specific location classification, and with the specific hazardous material encountered. Conduit entrances shall be integral threaded

type.

2.7 CABINETS

A. Comply with UL 50, "Electrical Cabinets and Boxes."

B. Construction: Sheet steel, NEMA 1 class except as otherwise indicated. Cabinet shall consist of a box and a front consisting of a one piece frame and a hinged door. Arrange door to close against a rabbet placed all around the inside edge of the frame, with a uniformly close fit between door and frame. Provide concealed fasteners, not over 24-inches apart, to hold fronts to cabinet boxes and provide for adjustment. Provide flush or concealed door hinges not over 24-inches apart and not over 6-inches from top and bottom of door. For flush cabinets, make the front approximately 3/4 inch larger than the box all around. For surface mounted cabinets make front same height and width as box.

C. Doors: Double doors for cabinets wider than 24-inches. Telephone cabinets wider than 48-inches may have sliding or removable doors.

D. Locks: Combination spring catch and key lock, with all locks for cabinets of the same system keyed alike. Locks may be omitted on signal, power, and lighting cabinets located within wire closets and mechanical-electrical rooms. Locks shall be of a type to permit doors to latch closed without locking.

2.8 STEEL ENCLOSURES WITH HINGED DOORS

A. Comply with UL 50, "Cabinets and Enclosures" and NEMA ICS 6, "Enclosures for Industrial Controls and Systems."

B. Construction: Sheet steel, 16 gage, minimum, with continuous welded seams.

C. Doors: Hinged directly to cabinet and removable, with approximately 3/4-inch flange around all edges, shaped to cover edge of box. Provide handle operated, key locking latch. Individual door width shall be no greater than 24-inches. Provide multiple doors where required.

D. Mounting Panel: Provide painted removable internal mounting panel for component installation.

E. Enclosure: NEMA 12 surface mounted, except as indicated. Where door gasketing is required, provide neoprene gasket attached with oil-resistant adhesive, and held in place with steel retaining strips. For all enclosures of class higher than NEMA 1, use hubbed raceway entrances.

2.9 CAST METAL ENCLOSURES WITH HINGED DOORS

A. Copper free aluminum with bolted, hinged doors. Where used at hazardous (classified) locations, enclosures shall conform to UL and shall be listed and labeled for the classification of hazard involved.

2.10 MOLDED NONMETALLIC ENCLOSURES WITH HINGED DOOR

A. General: Molded, glass fiber reinforced high impact strength polyester with bolt or screw secured doors and solid neoprene gaskets.

PART 3 – EXECUTION

3.1 INSTALLATION, GENERAL

A. Locations: Install items where indicated and where required to suit code requirements and installation conditions.

B. Cap unused knockout holes where blanks have been removed and plug unused conduit hubs.

C. Support and fasten items securely in accordance with Division 26 Section "Supporting Devices."

D. Sizes shall be adequate to meet NEC volume requirements, but in no case smaller than sizes indicated.

E. Remove sharp edges where they may come in contact with wiring or personnel.

F. Where two, or more, switches or other similar wiring devices are indicated at a single location they shall be installed in a ganged common box.

G. Boxes to be set in concrete shall be type suitable for the purpose.

3.2 APPLICATIONS

A. Cabinets: Flush mounted, NEMA enclosure type 1 except as otherwise indicated.

B. Hinged Door Enclosures: NEMA type 12 enclosure except as indicated.

C. Hinged Door Enclosures Outdoors: Install drip hood, factory tailored to individual units.

D. Hinged Door Enclosures in Corrosive Locations: NEMA type 4X nonmetallic enclosure.

E. Outlet Boxes and Fittings: Install outlet and device boxes and associated covers and fittings of materials and NEMA types suitable for each location and in conformance with the following requirements:

F. Interior Dry Locations: Sheet steel, NEMA type 1.

G. Locations Exposed to Weather or Dampness: Cast metal, NEMA type 3R.

H. Wet Locations: NEMA type 4 enclosures.

I. Corrosive Locations: NEMA type 4X enclosures.

J. Hazardous (Classified) Locations: NEMA type listed and labeled for the location and class of hazard indicated.

K. Pull and Junction Boxes: Install pull and junction boxes of materials and NEMA types suitable for each location except as otherwise indicated.

3.3 INSTALLATION OF OUTLET BOXES

A. Outlets at Windows and Doors: Locate close to window trim. For outlets indicated above doors use 6 '- 9" mounting height above finished floor and center outlets above the door opening except as otherwise indicated.

B. Column and Pilaster Locations: Locate outlet boxes for switches and receptacles on columns or pilasters so the centers of the columns are clear for future installation of partitions.

C. Locations in Special Finish Materials: For outlet boxes for receptacles and switches mounted in desks or furniture cabinets or in glazed tile, concrete block, marble, brick, stone or wood walls, use rectangular shaped boxes with square corners and straight sides. Install such boxes without plaster rings. Saw cut all recesses for outlet boxes in exposed masonry walls.

D. Gasketed Boxes: At the following locations use cast metal, threaded hub type boxes with gasketed weatherproof covers:

E. Exterior locations. Where surface mounted on unfinished walls, columns or pilasters. (Cover gaskets may be omitted in dry locations). Where exposed to moisture laden atmosphere. At food preparation equipment within four ft. of steam connections. Where indicated.

F. Cast-Iron Boxes: Iron alloy, waterproof, with threaded raceway entries and features and accessories suitable for each location, including mounting ears, threaded screw holes for devices and closure plugs.

G. Mounting: Mount outlet boxes for switches with the long axis vertical or as indicated. Mount boxes for receptacles either vertically or horizontally but consistently either way. Three or more gang boxes shall be mounted with the long axis horizontal. Locate box covers or device plates so they will not span different types of building finishes either vertically or horizontally. Locate boxes for switches near doors on the side opposite the hinges and close to door trim, even though electrical floor plans may show them on hinge side.

H. Ceiling Outlets: For fixtures, where wiring is concealed, use outlet boxes 4-inches square by 2-1/8-inches deep, minimum.

I. Cover Plates for Surface Boxes: Use plates sized to box front without overlap.

J. Protect outlet boxes to prevent entrance of plaster, and debris. Thoroughly clean foreign material from boxes before conductors are installed.

K. Concrete Boxes: Use extra deep boxes to permit side conduit entrance without interfering with reinforcing, but do not use such boxes with over 6-inch depth.

L. Existing Outlet Boxes: Where extension rings are required to be installed, drill new mounting holes in the rings to align with the mounting holes on the existing boxes where existing holes are not aligned.

3.4 INSTALLATION OF PULL AND JUNCTION BOXES

A. Box Selection: For boxes in main feeder conduit runs, use sizes not smaller than 8-inches square by 4-inches deep. Do not exceed 6 entering and 6 leaving raceways in a single box:

B. Cable Supports: Install clamps, grids, or devices to which cables may be secured. Arrange cables so they may be readily identified. Support cable at least every 30-inches inside boxes.

C. Mount pull boxes in inaccessible ceilings with the covers flush with the finished ceiling.

D. Install pull and junction boxes in locations that allow for access to covers and contents.

E. Size: Provide pull and junction boxes for telephone, signal, and other systems at least 50 percent larger than would be required by Article 370 of NEC, or as indicated. Locate boxes strategically and provide shapes to permit easy pulling of future wires or cables of type's normal for such systems.

3.5 INSTALLATION OF CABINETS AND HINGED DOOR ENCLOSURES

A. Mount with fronts straight and plumb.

B. Install with tops no more than 78-inches above floor.

C. Set cabinets in finished spaces flush with walls.

3.6 GROUNDING

A. Electrically ground metallic cabinets, boxes, and enclosures. Where wiring to item includes a grounding conductor, provide a grounding terminal in the interior of the cabinet, box or enclosure.

B. Provide grounding bushings on metallic conduits that enter non-metallic cabinets, boxes and enclosures to ensure bondings of raceway system.

3.7 CLEANING AND FINISH REPAIR

A. Upon completion of installation, inspect components. Remove burrs, dirt, and

construction debris and repair damaged finish including chips, scratches, abrasions and weld marks.

B. Galvanized Finish: Repair damage using a zinc-rich paint recommended by the tray manufacturer.

C. Painted Finish: Repair damage using matching corrosion inhibiting touch-up coating.

END OF SECTION 262716

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SECTION 26 2726 - WIRING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Requirements of the following Division 26 Sections apply to this section:

1. Basic Electrical Requirements.

1.2 SUMMARY

A. This Section includes the following:

1. Receptacles
2. Ground Fault Circuit Interrupter Receptacles
3. Wall Plates

B. Related Sections: The following sections contain requirements that relate to this section:

1. Division 26 Section "Electrical Identification" for requirements for legends to be engraved on wall plates.

1.3 SUBMITTALS

A. Product data for each type of product specified.

B. Coordinate color of device and device cover plates with architect prior to purchase.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with provisions of the following codes:

1. NFPA 70 "National Electrical Code".

2. UL and NEMA Compliance: Provide wiring devices which are listed and labeled by UL and comply with applicable UL and NEMA standards.

1.5 SEQUENCE AND SCHEDULING

A. Schedule installation of finish plates after the surface upon which they are installed has received final finish.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Arrow-Hart Co.
2. Crouse-Hinds Co.
3. General Electric Co.
4. Hubbell Inc.
5. Leviton Co.
6. Pass and Seymour Inc.
7. Square D Co.
8. Russellstoll

2.2 WIRING DEVICES

A. General: Provide wiring devices, in types, characteristics, grades, colors, and electrical ratings for applications indicated which are UL listed and which comply with NEMA WD 1 and other applicable UL and NEMA standards. Provide white color devices and wall plates except as otherwise indicated. Verify color selections with Architect. Devices have been specified around Leviton.

B. Receptacles:

1. Receptacles shall be duplex, specification grade, 3-wire, grounding type, back and side wired with white nylon body. Receptacles shall be rated for 20 Ampere at 125 volts and shall be NEMA 5-20R configuration.

2. 20 Ampere duplex receptacles shall have ground terminal lugs and automatic grounding clips attached to one mounting ear.

3. 20 Ampere duplex receptacles shall be Cat. No. 5362-W.

C. Ground Fault Interrupter Type Receptacles:

1. Ground fault interrupter type receptacles shall be duplex, specification grade, 3-wire, and grounding type. Receptacles shall have self test diagnostic feature that prevents receptacle from being reset if an internal malfunction occurs. Receptacles shall be rated for 20 Ampere at 125 Volts and shall be NEMA 5-20R configuration, white body.

2. Ground fault interrupting type receptacles shall be Cat. No. 8899-W.

2.3 WIRING DEVICE ACCESSORIES

A. Wall plates: Single and combination, of types, sizes, and with ganging and cutouts as indicated. Provide plates which mate and match with wiring devices to which attached. Provide metal screws for securing plates to devices with screw heads colored to match finish of plates. Provide wall plate color to match wiring devices except as otherwise indicated. Provide wall plates with engraved legend where indicated. Conform to requirements of Section "Electrical Identification." Provide plates possessing the following additional construction features:

B. Interior finished locations:

1. Material and Finish: 0.04 inch thick, type 302 satin finished stainless steel.

C. Interior unfinished locations:

1. Material and Finish: Steel plate, galvanized.

D. Interior and exterior damp and wet locations:

1. Damp locations: In areas classified as damp location per the NEC the device cover shall be Die-cast metal with self-closing lid, Cat. No. 4976.

2. Wet locations: In areas classified as wet location per the NEC the device cover shall be thermoplastic with self-closing lid, which for receptacles would allow a cord to be plugged in and the lid closed, Cat. No. 5977.

PART 3 - EXECUTION

3.1 INSTALLATION OF WIRING DEVICES AND ACCESSORIES

A. Install wiring devices and accessories as indicated, in accordance with manufacturer's written instructions, applicable requirements of NEC and in accordance with recognized industry practices to fulfill project requirements.

B. Coordinate with other work, including painting, electrical boxes and wiring installations, as necessary to interface installation of wiring devices with other work.

C. Install wiring devices only in electrical boxes which are clean; free from building materials, dirt, and debris.

D. Install wiring devices after wiring work is completed.

E. Duplex receptacles shall be mounted in a vertical position, unless noted otherwise on the Drawings.

F. Wiring devices mounted over counters shall be installed above the countertop

backsplashes and so as not to interfere with any cabinet work.

G. Tighten connectors and terminals, including screws and bolts, in accordance with equipment manufacturer's published torque tightening values for wiring devices. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL Standard 486A. Use properly scaled torque indicating hand tool.

3.2 PROTECTION

A. Protect installed components from damage. Replace damaged items prior to final acceptance.

3.3 FIELD QUALITY CONTROL

A. Testing: Prior to energizing circuits, test wiring for electrical continuity, and for short-circuits. Ensure proper polarity of connections is maintained. Subsequent to energizing, test wiring devices and demonstrate compliance with requirements, operating each operable device at least six times.

B. Test ground fault interrupter operation with both local and remote fault simulations in accordance with manufacturer recommendations.

3.4 MOUNTING HEIGHTS

A. All wiring devices shall be mounted at the following heights above finished floor to the center of the device, unless noted otherwise on the Drawings:

1. Duplex receptacles - 18 inches
2. Weatherproof receptacles - 24 inches

END OF SECTION 262726

SECTION 28 3100 - FIRE ALARM SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Requirements of the following Division 26 Sections apply to this Section:

1. "Basic Electrical Requirements"
2. "Basic Electrical Materials and Methods"

C. Requirements of the following Division 21 Sections apply to this Section:

1. "Fire Protection System" for water flow, pressure, or tamper switches connected to fire alarm system.

1.2 SUMMARY

A. This Section includes fire alarm systems. It includes requirements for system components including the following:

1. Manual stations.
2. Smoke detectors.
3. Heat Detectors.
4. Visual alarm signals.
5. Horns.
6. Addressable interface units.
7. Annunciator.
8. Emergency power supply.

1.3 DEFINITIONS

A. Alarm Initiating Device: A manual station, smoke detector, heat detector, flame detector, or sprinkler water flow switch.

B. Alarm Signal: Signifies a state of emergency requiring immediate action. Pertains to signals such as the operation of a manual station and the operation of a sprinkler system flow switch.

C. Class B Wiring: Circuits electrically supervised such that a single break or a single ground fault condition will be indicated by a trouble signal at the FACP no matter where the break or ground fault condition occurs.

D. Multiplex System: One using signaling method characterized by the simultaneous or sequential transmission, or both, and the reception of multiple signals in a communication channel, including means for positively identifying each signal.

E. Supervisory Signal: Indicates need for action regarding fire suppression or other protective system.

F. Trouble Signal: Indicates that a fault, such as an open circuit or ground, has occurred in the system.

G. Zone: Initiating device or combination of devices connected to a single alarm initiating device circuit.

1.4 SYSTEM DESCRIPTION

A. General: Zoned, noncoded, addressable, microprocessor based type system with manual and automatic alarm initiation.

B. Signal Transmission: existing to remain 8 zone radio master box.

C. Audible Alarm Indication: By sounding of horns and bells.

D. Functional Description: Provide a complete fire alarm and detection system with the following functions and operating features:

1. Priority of Signals: Automatic response functions shall be accomplished by the first zone initiated. Alarm functions resulting from initiation by the first zone shall not be altered by subsequent alarms. An alarm signal shall be the highest priority. Supervisory or trouble signals shall have second- and third-level priority. Signals of a higher level priority shall take precedence over signals of lower priority even though the lower priority condition occurred first. Annunciate all alarm signals regardless of priority or order received.

2. Noninterfering: Provide zoned, powered, wired, and supervised system so a signal on one zone does not prevent the receipt of signals from any other zone. All zones shall be manually resettable from the FACP after the initiating device or devices have been restored to normal. Systems that require the use of batteries or battery backup for the programming function are not acceptable.

3. Signal Initiation: The manual or automatic operation of an alarm initiating or supervisory operating device shall cause the FACP to transmit an appropriate signal including:

   a. General alarm.
   b. Detector alarm (heat and smoke).
   c. Flow switch alarm.
   d. Valve tamper supervisory.
   e. Sprinkler dry pipe low pressure supervisory.
   f. Sprinkler dry pipe high pressure alarm.

g. Elevator recall.
h. System trouble.
i. Louver operation.

E. Transmission to Worcester Fire Department: Alarm signals shall be automatically routed in a listed and approved manner to an existing 8 channel radio master box using listed and approved equipment.

F. Silencing at FACP: Switches shall provide capability for acknowledgment of alarm; supervisory, trouble, and other specified signals at the FACP; and capability to silence the local audible signal and light an LED (light emitting diode). Subsequent zone alarms shall cause the audible signal to sound again until silenced in turn by switch operation. Restoration to normal of alarm, supervisory, and trouble conditions shall extinguish the associated LED and cause the audible signal to sound again until the restoration is acknowledged by switch operation.

G. Power Loss Indication: Sound trouble signal at the FACP upon loss of primary power at the FACP and the annunciator. Illuminate the emergency power light at both locations when the system is operating on an alternate power supply.

H. Annunciation: Annunciate manual or automatic operation of any alarm or supervisory initiating device both on the FACP and on the annunciator indicating the location and type device.

I. FACP Alphanumeric Display: Alphanumeric display.

J. General Alarm: A system general alarm includes:

1. Indicating the general alarm condition at the FACP and the system annunciator.

2. Identifying the device that is the source of the alarm at the FACP and the system annunciator.

3. Initiating audible and visible alarm signals throughout the building.

4. Initiating transmission of alarm signal to the Worcester Fire Department (Zone 1).

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K. Manual station alarm operation initiates a general alarm.

L. Water flow alarm switch or dry pipe high pressure flow switch operation:

1. Initiates a general alarm with the exception of identified zone transmission.

2. Causes the device location indicating lamp of the device that has operated to flash.

3. Transmit water flow alarm to the Worcester Fire Department (Zone 2).

M. Smoke detection initiates a general alarm.

N. Heat detection initiates a general alarm.

O. Sprinkler valve tamper switch or dry pipe low-air pressure switch operation:

1. Causes a supervisory audible and visible "valve tamper" signal indication at FACP and annunciator.

2. Causes location indicating light to flash for the device that has operated.

3. Initiates transmission of sprinkler supervisory signal to the Worcester Fire Department (Zone 3).

P. Carbon Monoxide Detector Operation:

1. Currently, there are no carbon monoxide detectors in the fire alarm system. The system shall have provisions to add carbon monoxide detectors in the future. If carbon monoxide detectors are added in the future, detection would cause a supervisory audible and visible "Carbon Monoxide Detection" signal to be indicated at FACP and annunciator.

2. If carbon monoxide detectors are added in the future, detection would Initiate a transmission of Carbon Monoxide alarm signal to the Worcester Fire Department (Zone 4).

Q. Duct smoke detector operation:

1. Currently, there are no duct smoke detectors in the fire alarm system. The system shall have provisions to add duct smoke detectors in the future. If duct smoke detectors are added in the future, detection would cause a supervisory audible and visible " duct smoke detection " signal to be indication at FACP and annunciator

2. If duct smoke detectors are added in the future, detection would cause location indicating light to flash for the device that has operated.

3. If duct smoke detectors are added in the future, detection would cause the associated fan to shut down.

4. If duct smoke detectors are added in the future, detection would initiate transmission of general supervisory signal to the Worcester Fire Department (Zone 7).

R. Independent System Monitoring: Supervise each independent smoke detection system, and elevator heat detection system for both normal operation and trouble.

1. Circuit Supervision: Indicate circuit faults with both a zone and a trouble signal at the FACP. Provide a distinctive indicating audible tone and (LED) indicating

light. The maximum elapsed time between the occurrence of the trouble condition and its indication at the FACP is 200 seconds.

2. Heat detectors in elevator lobbies shall also recall elevator to the programmed level.

3. Heat detector in elevator machine room shall also recall elevator to the programmed level and shall cause the associated fire fighter helmet signal to flash.

1.5 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data for fire alarm system components including dimensioned plans, sections, and elevations showing minimum clearances, installed features and devices, and list of materials and NRTL listing data.

C. Wiring diagrams from manufacturer differentiating between manufacturer-installed and field-installed wiring. Include diagrams for equipment and for system with all terminals and interconnections identified. Include drawings indicating components for both field and factory panel wiring.

D. System operation description including method of operation and supervision of each type of circuit and sequence of operations for all manually and automatically initiated system inputs. Description shall cover this specific project. Manufacturer's standard descriptions for generic systems are not acceptable.

E. Calculations for battery capacity for both alarm and supervisory modes.

F. Operation and maintenance data for inclusion in Operating and Maintenance Manual specified in Division 1 and in Division 26 Section "Basic Electrical Requirements." Operation and maintenance data shall cover each type of product, including all features and operating sequences, both automatic and manual. Provide spare parts data. Provide the name, addresses, and telephone numbers of service organizations that carry stock of repair parts for the system to be furnished.

G. Operating and instruction manuals shall be submitted prior to testing of the system, five (5) complete sets of operating and instruction manuals, four (4) shall be delivered to the Owner upon completion, and one (1) to the fire department prior to final acceptance.

H. Complete, simple, comprehensive, step-by-step, testing instructions giving recommended and required testing frequency of all equipment, methods for testing each individual piece of equipment, and a complete trouble-shooting manual explaining what might be wrong if a certain malfunction occurs and explaining how to test the primary internal parts of each piece of equipment, shall be delivered to the Owner upon completion of the system.

I. Maintenance instructions shall be complete, easy to read, understandable, and shall

provide the following information:

1. Instructions on replacing any components of the system, including internal parts.

2. Instructions on periodic cleaning and adjustment of equipment with a schedule of these functions.

3. A complete list of all equipment and components with information as to the address and phone number of both the manufacturer and local supplier of each item.

4. User operating instructions shall be provided, prominently displayed on the cabinet front or on a separate sheet located next to the control unit in accordance with U.L. #864.

J. Product certification signed by the manufacturer of the fire alarm system components certifying that their products comply with the referenced standards.

K. Submission to Authority Having Jurisdiction: In addition to routine submission of the above material, make a simultaneous identical submission to the Worcester Fire Department. Include copies of annotated Contract Drawings as required to depict component locations to facilitate review. Upon receipt of comments from the authority, submit a copy of the marked-up submittal for review. Make resubmissions to the authority if required to make clarifications or revisions to obtain approval.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who is a factory-authorized service representative to perform the Work of this Section.

B. Compliance With Local Requirements: Comply with the applicable building code, local ordinances, and regulations and the requirements of the authority having jurisdiction.

C. Electrical Component Standard: Components and installation shall comply with NFPA 70 "National Electrical Code."

D. NFPA Compliance: Provide fire alarm and detection systems conforming to the NFPA 72.

E. UL Listing and Labeling: Provide system and components specified in this Section that are listed and labeled by UL.

F. Single-Source Responsibility: Obtain fire alarm components from a single source who assumes responsibility for compatibility for system components furnished.

1.7 MAINTENANCE SERVICE

A. Maintenance Service Contract: Provide maintenance of fire alarm systems and equipment for a period of 12 months commencing with Substantial Completion, using

factory-authorized service representatives.

1. Basic services: Systematic, routine maintenance visits on a monthly basis at times coordinated with the Owner. In addition, respond to service calls within 24 hours of notification of system trouble. Adjust and replace defective parts and components with original manufacturer's replacement parts, components, and supplies.

2. Additional Services: Perform services within the above 12-month period not classified as routine maintenance or as warranty work as described in Division 1 Section "Warranties and Bonds" when authorized in writing. Compensation for additional services must be agreed upon in writing prior to performing services.

3. Renewal of Maintenance Service Contract: No later than 60 days prior to the expiration of the maintenance services contract, deliver to the Owner a proposal to provide contract maintenance and repair services for an additional one-year term. Owner will be under no obligation to accept maintenance service contract renewal proposal.

1.8 EXTRA MATERIALS

A. General: Furnish extra materials matching products installed, as described below, packaged with protective covering for storage, and identified with labels clearly describing contents.

B. Glass Rods for Manual Stations: Furnish quantity equal to 15 percent of the number of manual stations installed; minimum of 6 rods.

C. Notification Devices:

1. Horn/Strobes: Furnish quantity equal to 5 percent of the number of units of each type installed, but not less than one.

2. Strobe Only Units: Furnish quantity equal to 10 percent of the number of units of each type installed, but not less than one.

D. Smoke Detectors, Fire Detectors, and Flame Detectors: Furnish quantity equal to 10 percent of the number of units of each type installed but not less than one of each type.

E. Detector Bases: Furnish quantity equal to 2 percent of the number of units of each type installed but not less than one of each type.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: New devices shall be compatible and listed to interconnect with the existing Notifier fire alarm control panel.

2.2 MANUAL PULL STATIONS

A. General: Double-action type, fabricated of metal or plastic, and finished in red with molded raised letter operating instructions of contrasting color. Stations requiring the breaking of a glass panel are not acceptable. Stations that require the breaking of a concealed glass rod may be provided.

B. Reset: Key- operated reset station switch, for the voltage and current at which they operate. Provide stations with screw terminals for connections.

C. For Weatherproof Manual Pull Stations: Tamperproof clear polycarbonate shield and frame suitable for surface mounted pull stations complete with weather gasket equal to STI #STI-3150.

2.3 SMOKE DETECTORS

A. General: Comply with UL 268, "Smoke Detectors for Fire Protective Signaling Systems." Provide the following features:

1. Factory Nameplate: With serial number and type identification.

2. Operating Voltage: 24-V d.c., nominal.

3. Self-Restoring: Provide detectors that do not require resetting or readjustment after actuation to restore them to normal operation.

4. Plug-in Arrangement: Detector and associated encapsulated electronic components mounted in a module that connects to a fixed base with a twist-locking plug connection. The plug connection shall require no springs for secure mounting and contact maintenance. Provide terminals in the fixed base for building wiring.

5. Visual Indicator: Connected to indicate detector has operated.

6. Addressability: Provide detectors with a communication transmitter and receiver having a unique identification and status reporting capability to the FACP.

7. Remote Controllability: Provide detectors individually monitorable at the FACP for calibration, sensitivity, and alarm condition, and have capability of individually adjustable sensitivity from the FACP.

B. Photoelectric Smoke Detectors: Include the following features and characteristics:

1. Detector Sensitivity: Between 2.5 and 3.5 percent per foot smoke obscuration when tested in accordance with UL 268.

2. Sensor: Infrared detector light source with matching silicon cell receiver.

C. Thermal Detector: Combination fixed-temperature and rate-of-rise unit with mounting plate arranged for outlet box mounting; 135-deg F. fixed-temperature setting except as otherwise indicated.

D. Addressable Thermal Detector: Rate-compensated/fixed-temperature type with plug-in base and alarm indication lamp. Provide detectors with a communication transmitter and receiver complete having a unique identification and status-reporting capability to the FACP.

2.4 ALARM INDICATING DEVICES

A. General: Equip alarm indicating devices for mounting as indicated. Provide terminal blocks for system connections.

B. Fire Alarm Bells: Electric vibrating, 24 V d.c., under dome type, with provision for housing the operating mechanism behind the bell. When operating, bells shall provide a sound pressure level of 94 dB, measured 10 ft. from the bell. 10 inch size except as indicated. Where indicated, bells shall be weatherproof type.

C. Addressable Interface Units: Unit designed to monitor system component not equipped for multiplex communication with FACP and transmit identification and status to that terminal. Provide units with a communication transmitter and receiver complete having a unique identification and status-reporting capability to the FACP.

D. Fire Alarm Horns: The device shall be red with a clear lens and utilize Light Emitting Diode (LED) technology to provide lower current draw and consistent visual appearance. The strobe shall flash at 1 flash per second (1 Hz) minimum over the entire regulated voltage range.

E. Visual Alarm Signals: Electronic strobe lights utilizing high-intensity LED lamps and clear, optic lens. Provide luminaires having their lenses mounted on an aluminum face plate. Provide the word "FIRE" engraved in minimum 1-inch-high letters displayed on the unit. Provide with field selectable candela light output.

F. Combination Signals: Provide factory-combined audible and visible alarm units of type indicated in a single mounting unit where indicated.

2.5 LOCATION INDICATING LIGHTS

A. General: Provide location-indicating, system-voltage lights for each sprinkler water flow switch and valve tamper switch location. At each water flow switch location provide a red laminated phenolic resin identification plate at the indicating light, bearing in

engraved white letters, room numbers of protected spaces downstream from the device. Provide terminal blocks for making connections.

2.6 FIRE ALARM CONTROL PANEL (FACP)

A. The existing Notifier fire alarm control panel shall remain.

2.7 LCD ANNUNCIATOR

A. Furnish and install a remote LCD type annunciator as shown on Drawings. The annunciator shall be capable of being flush or surface mounted for indoor or outdoor applications. Annunciator shall provide the basic interface between human operator at FACP and addressable system components, including annunciation, supervision, and control. Annunciator shall be provided with an integral heater for outdoor application.

2.8 ANNUNCIATOR FEATURES

A. Five inch high-definition touchscreen display.

B. Programmer key switch for user authentication, providing the ability to enable the control inputs for acknowledge, silence, reset, and drill.

C. Configurable control buttons that are operational only when key switch is unlocked:

1. Acknowledge
2. Silence
3. Reset
4. Drill.

D. Six programmable buttons; each with a descriptor/label, status indicator, and configurable action (on/off, disable/enable).

2.9 EMERGENCY POWER SUPPLY

A. General: Components include battery, charger, and an automatic transfer switch.

B. Battery: Sealed lead-acid type. Provide sufficient capacity to operate the complete alarm system in normal or supervisory (nonalarm) mode for a period of 24 hours. Following this period of operation on battery power, the batteries shall have sufficient capacity to operate all components of the system, including all alarm indicating devices in alarm or supervisory mode for a period of 5 minutes.

1. The 120VAC main power shall be converted to 24VDC, rectified and regulated for system operation. The entire system shall operate on 24 VDC.

2. The rated current available from the power supply shall be 4 amps of filtered and regulated DC and shall comply with the latest issue of U.L. Standard #864.

C. Automatic Transfer Switch: Transfer the load to the battery without loss of signals or

status indications in the event of the failure of primary power.

D. Battery Charger: Solid-state, fully automatic, variable- charging-rate type. Provide for 150 percent of the connected system load while maintaining the batteries at full charge. In the event batteries are fully discharged, the charger shall recharge them fully within four hours. Charger output shall be supervised as part of system power supply supervision.

2.10 WIRE

A. Line-Voltage and Low-Voltage Circuits: Solid copper conductors with 600-V rated insulation.

1. Provide Class 1 initiating and alarm circuits with electrical supervision for shorts and open conditions.

2. Install diodes or resistors in fire alarm control cabinet (Class A).

3. Fire alarm system wiring shall be a power limited fire protection signaling circuit multi-conductor cable, 105 degree Celsius, Type FAPL, 300 volt rated, red jacket.

4. Signal circuit wiring shall be minimum No. 14 AWG copper, solid.

5. Initiation circuit wiring shall be minimum No. 16 AWG copper, solid.

2.11 TAGS

A. Tags For Identifying Tested Components: Comply with NFPA 72H.

2.12 KNOX VAULT

A. Knox vault shall be existing to remain.

2.13 RADIO MASTER FIRE ALARM BOX

A. Radio Master Fire Alarm Box will be existing to remain including control relays for initiating each zone and monitor module to transmit a trouble condition to the fire alarm control panel.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Install system in accordance with NFPA Standards referenced in Parts 1 and 2 of this Section.

B. Fire Alarm Power Supply Disconnect: Paint red and label "FIRE ALARM." Provide with lockable handle or cover.

3.2 EQUIPMENT INSTALLATION

A. Existing Fire Alarm Equipment: Maintain fully operational until the new equipment has been tested and accepted. As new equipment is installed, labeled it "NOT IN SERVICE" until the new equipment is accepted. Remove tags from new equipment when put into service and tag existing fire alarm equipment "NOT IN SERVICE" until removed from the building.

B. Equipment Removal: After acceptance of the new fire alarm system, remove existing, disconnected fire alarm equipment and restore damaged surfaces. Package operational fire alarm and detection equipment that has been removed deliver to the Owner. Removed from the site and legally disposed of the remainder of the existing material.

C. Manual Pull Stations: Unless otherwise indicated mount semi-flush in recessed back boxes with operating handles 4' - 6" above finished floor.

D. Water Flow Detectors, Valve Supervisory Switches, and Dry-Pipe Pressure Switches: Connect for each sprinkler valve station required to be supervised.

E. Smoke Detectors: Install detectors indicated to be ceiling mounted not less than 4 inches from a side wall to the near edge. Install detectors located on the wall at least 4 inches but not more than 12 inches below the ceiling. For exposed solid joist construction, mount detectors on the bottoms of the joists. On smooth ceilings, install detectors not over 30 ft. apart in any direction. Install detectors no closer than 5 ft. from air registers.

F. Audible Alarm Indicating Devices: Install not less than 90 inches above the finished floor nor less than 6 inches below the ceiling. Unless otherwise indicated, install bells and horns on flush mounted back boxes with the device operating mechanism concealed behind a grille. Combine audible and visible alarms at the same location into a single unit.

G. Visual Alarm Indicating Devices: Install adjacent to each alarm bell or alarm horn. Install not less than 80 inches above the finished floor and at least 6 inches below the ceiling.

H. Device Location Indicating Lights: Locate in the public space immediately adjacent to the device they monitor.

I. Annunciator: Arrange as indicated, with the center of the LCD display at 5 ft. above the finished floor.

3.3 WIRING INSTALLATION

A. Wiring Method: Install wiring in metal raceway in accordance with Division 26 Section "Raceways." Conceal raceway except in unfinished spaces and as indicated.

B. Install wires and cables without splices. Make connections at terminal strips in cabinets or at equipment terminals. Make soldered splices in electronic circuits in control cabinets.

C. System shall be free from grounds, shorts and open circuits.

D. All wire terminations at control panel and annunciator panel shall be properly tagged showing zone and/or circuit identification.

E. Power shall not be applied to the system until the system has been completely checked for grounds, shorts and open circuits, by an authorized representative of the manufacturer.

F. Raceways containing conductors identified as "Fire Protective Alarm System" conductors shall not contain any other conductors, and A.C. current carrying conductors will not be allowed in the same raceway with the D.C. fire alarm detection and signaling conductors.

G. The Installer shall coordinate the installation of the fire alarm equipment with the manufacturer or his authorized distributor. All conductors and wiring shall be installed per the manufacturer's recommendations. It shall be the Installer's responsibility to coordinate with the supplier the correct wiring procedures prior to installing conduits or conductors.

H. Pigtail connections between circuit wires and detector terminals are not acceptable. Devices shall be connected directly to the circuit line wires.

I. Wiring Within Enclosures: Install conductors parallel with or at right angles to the sides and back of the enclosure. Bundle, lace, and train the conductors to terminal points with no excess. Connect conductors that are terminated, spliced, or interrupted in any enclosure associated with the fire alarm system to terminal blocks. Mark each terminal in accordance with the wiring diagrams of the system. Make all connections with approved crimp-on terminal spade lugs, pressure-type terminal blocks, or plug connectors.

J. Cable Taps: Use numbered terminal strips in junction, pull or outlet boxes, cabinets, or equipment enclosures where any circuit tap is made.

K. Alarm Wiring: For the low-voltage portion of the fire alarm system, install No. 16 AWG conductors and 75-deg C insulation in wet, damp, or dry locations. Provide wiring operating at line voltage as minimum No. 12 AWG size having similar insulation.

L. Color Coding: Color code all fire alarm conductors differently from the normal building power wiring. Provide one color code for alarm circuits wiring and a different color code for supervisory circuits. Provide a color code for audible alarm indicating circuits different from alarm initiating circuits. Use different colors for visual alarm indicating devices. Paint fire alarm system junction boxes and covers red.

M. Risers: Provide a minimum of two vertical cable risers to serve the fire alarm system. Separate riser runs in close proximity to each other by a fire wall with a minimum one-hour rating so the loss of one riser does not prevent the receipt or transmission of signal from other floors or zones.

N. Wiring to Central Station Transmitter: Provide a 1-inch conduit between the FACP and the central station transmitter connection as indicated. Provide number of conductors and electrical supervision for connecting wiring as required to suit central-station monitoring function.

3.4 GROUNDING

A. Ground equipment and conductor and cable shields. For audio circuits, minimize to the greatest extent possible ground loops, common mode returns, noise pickup, cross talk, and other impairments. Provide 5-ohm ground at main equipment location. Measure, record, and report ground resistance.

3.5 FIELD QUALITY CONTROL

A. Manufacturer's Field Services: Provide services of a factory-authorized service representative to supervise the field assembly and connection of components and the pretesting, testing, and adjustment of the system.

B. Pretesting: Upon completing installation of the system, align, adjust, and balance the system and perform complete pretesting. Determine, through pretesting, the conformance of the system to the requirements of the Drawings and Specifications. Correct deficiencies observed in pretesting. Replace malfunctioning or damaged items with new and retest until satisfactory performance and conditions are achieved. Prepare forms for systematic recording of acceptance test results.

C. Report of Pretesting: After pretesting is complete, provide a letter certifying the installation is complete and fully operable. The letter shall include the names and titles of the witnesses to the preliminary tests.

D. Final Test Notice: Provide 10 days' minimum notice in writing when the system is ready for final acceptance testing.

E. Minimum System Tests: Test the system in accordance with the procedures outlined in NFPA 72. Minimum required tests are as follows:

1. Verify the absence of unwanted voltages between circuit conductors and ground.

2. Megger test all conductors other than those intentionally and permanently grounded with electronic components disconnected. Test for resistance to ground. Report readings less than 1-megohm for evaluation.

3. Test all conductors for short circuits utilizing an insulation testing device.

4. With each circuit pair, short circuit at the far end of the circuit and measure the

circuit resistance with an ohmmeter. Record the circuit resistance of each circuit on the record drawings.

5. Verify the control unit is in the normal condition as detailed in the manufacturer's operating and maintenance manual.

6. Test initiating and indicating circuits for proper signal transmission under open circuit conditions. One connection each should be opened at not less than 10 percent of the initiating and indicating devices. Proper signal transmission in accordance with class of wiring used shall be observed.

7. Test each initiating and indicating device for alarm operating and proper response at the control unit. Test smoke detectors with actual products of combustion.

8. Test the system for all specified functions in accordance with the manufacturer's operating and maintenance manual. Systematically initiate specified functional performance items at each station including making all possible alarm and monitoring initiations and using all communications options. For each item, observe related performance at all devices required to be affected by the item under all system sequences. Observe indicating lights, displays, signal tones, and annunciator indications. Observe all voice audio for routing, clarity, quality, freedom from noise and distortion, and proper volume level.

9. Test both primary power and secondary power. Verify, by test, the secondary power system is capable of operating the system for the period and in the manner specified.

F. Retesting: Rectify deficiencies indicated by tests and completely retest work affected by such deficiencies at Contractor's expense. Verify by the system test that the total system meets the Specifications and complies with applicable standards.

G. Report of Tests and Inspections: Provide a written record of inspections, tests, and detailed test results in the form of a test log. Submit log upon the satisfactory completion of tests.

H. Tag all equipment and stations and other components at which tests have been satisfactorily completed. Place tags upon completion of tests.

3.6 COMMISSIONING

A. Provide the services of a factory-authorized service representative to demonstrate and train Owner's maintenance personnel as specified below.

1. Train Owner's maintenance personnel in the procedures and schedules involved in operating, troubleshooting, servicing, and preventive maintaining of the system. Provide a minimum of 4 hours' training.

2. Schedule training with the Owner at least seven days in advance.

3. Occupancy Adjustments: When requested within one year of date of Substantial Completion, provide on-site assistance in adjusting sound levels and adjusting controls to suit actual occupied conditions. Provide up to three visits to the site for this purpose.

B. Provide complete maintenance and inspection service for the fire alarm system, by a factory-trained authorized representative of the manufacturer, for a period of one year after final inspection and tests.

C. Prior to final acceptance of system, manufacturer of system shall, in presence of Contractor, Owner's Representative and Architect's/Engineer representative, test each sensing or detection and alarm device.

D. Submit copy of test results in duplicate after signed by Owner's Representative to Architect/Engineer, Owner, Owner's Insurance Company and local Fire Protection Authority. Mount copy of inspection record in lexan enclosed frame assembly on control panel.

END OF SECTION 283100

ft. above the finished floor.

J. Annunciator: Arrange as indicated, with the center of the LCD display at 5 ft. above the finished floor.

3.3 WIRING INSTALLATION

A. Wiring Method: Install wiring in metal raceway in accordance with Division 26 Section "Raceways." Conceal raceway except in unfinished spaces and as indicated.

B. Install wires and cables without splices. Make connections at terminal strips in cabinets or at equipment terminals. Make soldered splices in electronic circuits in control cabinets.

C. System shall be free from grounds, shorts and open circuits.

D. All wire terminations at control panel and annunciator panel shall be properly tagged showing zone and/or circuit identification.

E. Power shall not be applied to the system until the system has been completely checked for grounds, shorts and open circuits, by an authorized representative of the manufacturer.

F. Raceways containing conductors identified as "Fire Protective Alarm System" conductors shall not contain any other conductors, and A.C. current carrying conductors will not be allowed in the same raceway with the D.C. fire alarm detection and signalling conductors.

G. The Installer shall coordinate the installation of the fire alarm equipment with the manufacturer or his authorized distributor. All conductor and wiring shall be installed per the manufacturer's recommendations. It shall be the Installer's responsibility to coordinate with the supplier the correct wiring procedures prior to installing any conduits or conductors.

H. Pigtail connections between circuit wires and detector terminals are not acceptable. Devices shall be connected directly to the circuit line wires.

I. Wiring Within Enclosures: Install conductors parallel with or at right angles to the sides and back of the enclosure. Bundle, lace, and train the conductors to terminal points with no excess. Connect conductors that are terminated, spliced, or interrupted in any enclosure associated with the fire alarm system to terminal blocks. Mark each terminal in accordance with the wiring diagrams of the system. Make all connections with approved crimp-on terminal spade lugs, pressure-type terminal blocks, or plug connectors.

J. Cable Taps: Use numbered terminal strips in junction, pull or outlet boxes, cabinets, or equipment enclosures where any circuit tap is made.

K. Alarm Wiring: For the low-voltage portion of the fire alarm system, install No. 16 AWG conductors and 75-deg C insulation in wet, damp, or dry locations. Provide wiring operating at line voltage as minimum No. 12 AWG size having similar insulation.

L. Color Coding: Color code all fire alarm conductors differently from the normal building power wiring. Provide one color code for alarm circuits wiring and a different color code for supervisory circuits. Provide a color code for audible alarm indicating circuits different from alarm initiating circuits. Use different colors for visual alarm indicating devices. Paint fire alarm system junction boxes and covers red.

M. Risers: Provide a minimum of two vertical cable risers to serve the fire alarm system. Separate riser runs in close proximity to each other by a fire wall with a minimum one-hour rating so the loss of one riser does not prevent the receipt or transmission of signal from other floors or zones.

N. Wiring to Central Station Transmitter: Provide a 1-inch conduit between the FACP and the central station transmitter connection as indicated. Provide number of conductors and electrical supervision for connecting wiring as required to suit central-station monitoring function.

3.4 GROUNDING

A. Ground equipment and conductor and cable shields. For audio circuits, minimize to the greatest extent possible ground loops, common mode returns, noise pickup, cross talk, and other impairments. Provide 5-ohm ground at main equipment location. Measure, record, and report ground resistance.

3.5 FIELD QUALITY CONTROL

A. Manufacturer's Field Services: Provide services of a factory-authorized service representative to supervise the field assembly and connection of components and the pretesting, testing, and adjustment of the system.

B. Pretesting: Upon completing installation of the system, align, adjust, and balance the system and perform complete pretesting. Determine, through pretesting, the conformance of the system to the requirements of the Drawings and Specifications. Correct deficiencies observed in pretesting. Replace malfunctioning or damaged items with new and retest until satisfactory performance and conditions are achieved. Prepare forms for systematic recording of acceptance test results.

C. Report of Pretesting: After pretesting is complete, provide a letter certifying the installation is complete and fully operable. The letter shall include the names and titles of the witnesses to the preliminary tests.

D. Final Test Notice: Provide 10 days' minimum notice in writing when the system is ready for final acceptance testing.

E. Minimum System Tests: Test the system in accordance with the procedures outlined in NFPA 72H, Chapters 2 and 4 and NFPA 72E, Chapter 8. Minimum required tests are as follows:

1. Verify the absence of unwanted voltages between circuit conductors and ground.

2. Megger test all conductors other than those intentionally and permanently grounded with electronic components disconnected. Test for resistance to ground. Report readings less than 1-megohm for evaluation.

3. Test all conductors for short circuits utilizing an insulation testing device.

4. With each circuit pair, short circuit at the far end of the circuit and measure the circuit resistance with an ohmmeter. Record the circuit resistance of each circuit on the record drawings.

5. Verify the control unit is in the normal condition as detailed in the manufacturer's operating and maintenance manual.

6. Test initiating and indicating circuits for proper signal transmission under open circuit conditions. One connection each should be opened at not less than 10 percent of the initiating and indicating devices. Proper signal transmission in accordance with class of wiring used shall be observed.

7. Test each initiating and indicating device for alarm operating and proper response at the control unit. Test smoke detectors with actual products of combustion.

8. Test the system for all specified functions in accordance with the manufacturer's operating and maintenance manual. Systematically initiate specified functional performance items at each station including making all possible alarm and monitoring initiations and using all communications options. For each item, observe related performance at all devices required to be affected by the item under all system sequences. Observe indicating lights, displays, signal tones, and annunciator indications. Observe all voice audio for routing, clarity, quality, freedom from noise and distortion, and proper volume level.

9. Test both primary power and secondary power. Verify, by test, the secondary power system is capable of operating the system for the period and in the manner specified.

F. Retesting: Rectify deficiencies indicated by tests and completely retest work affected by such deficiencies at Contractor's expense. Verify by the system test that the total system meets the Specifications and complies with applicable standards.

G. Report of Tests and Inspections: Provide a written record of inspections, tests, and detailed test results in the form of a test log. Submit log upon the satisfactory completion of tests.

H. Tag all equipment and stations and other components at which tests have been satisfactorily completed. Place tags upon completion of tests.

3.6 COMMISSIONING

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A. Provide the services of a factory-authorized service representative to demonstrate and train Owner's maintenance personnel as specified below.

1. Train Owner's maintenance personnel in the procedures and schedules involved in operating, troubleshooting, servicing, and preventive maintaining of the system. Provide a minimum of 8 hours' training.

2. Schedule training with the Owner at least seven days in advance.

3. Occupancy Adjustments: When requested within one year of date of Substantial Completion, provide on-site assistance in adjusting sound levels and adjusting controls to suit actual occupied conditions. Provide up to three visits to the site for this purpose.

B. Provide complete maintenance and inspection service for the fire alarm system, by a factory-trained authorized representative of the manufacturer, for a period of one year after final inspection and tests.

C. Prior to final acceptance of system, manufacturer of system shall, in presence of Contractor, Owner's Representative and Architect's/Enginee representative, test each sensing or detection and alarm device.

D. Submit copy of test results in duplicate after signed by Owner's Representative to Architect/Engineer, Owner, Owner's Insurance Company and local Fire Protection Authority. Mount copy of inspection record in lexan enclosed frame assembly on control panel.

END OF SECTION 283100