CITY OF EVERETT, MASSACHUSETTS

548 Broadway Mechanical Repairs

CITY PROJECT NO.: MUN-27-41

Delivery Method: M.G.L. c.149, §§ 44A-44H inclusive

OWNER:

City of Everett, Massachusetts
484 Broadway, Room 14
Everett, MA 02149

ARCHITECT:

Perkins Eastman
20 Ashburton Street
Boston, MA 02108

9/15/2026

Section 00 0105 Project Directory

OWNER

City of Everett
484 Broadway
Everett, MA 02149

ARCHITECT

Perkins Eastman
20 Ashburton Place – 8th Floor
Boston, MA 02108

OWNER'S PROJECT MANAGER

Leftfield Project Management
225 Franklin Street
Boston, MA 02110

CONSULTANTS

Mechanical, Plumbing, Electrical Engineer
CMTA
161 Worcester Road
Suite 305
Framingham, MA 01701

PROJECT MANUAL

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Section 003000

CIT OF EVERETT, MASSACHUSETTS

CITY Project Number: MUN-27-41

548 Broadway Mechanical Repairs

INVITATION TO BID AND INSTRUCTIONS TO BIDDERS:

PRIME CONTRACTOR SERVICES & SUBCONTRACTOR SERVICES

Summary of Work: Ductwork, Controls and unit installation for temporary heating at 548 Broadway. All work to be performed in accordance with the Bid Documents as herein defined.

Estimated construction cost is $1,000,000.

On-Site Construction Start: October, 15 2026

Substantial Completion: December, 16 2026

Final Completion: December, 30 2026

The City of Everett (the "City") hereby requests bids from:

Prime Contractors (HVAC Contractors) interested in bidding and from Subcontractors the following subtrades:

- **Plumbing**
- **Electrical**

BID PROCESS

All bids for this project are subject to the applicable provisions of Massachusetts General Laws, Chapter 30, § 39M and Chapter 149, §§ 44A-44H inclusive. Attention is directed to the minimum wage rates to be paid on the work as determined by the Commissioner of Labor and Industries under the provisions of Massachusetts General Laws, Chapter 149, §§ 26-27 inclusive. The City reserves the

right to waive any informalities in or to reject any and all bids if it be in the best interest of the City to do so.

These instructions provide Bidders with information intended to enable them to prepare and submit Bids for consideration and evaluation by the City. The procurement process will consist of two phases of bidding: (1) Subcontractor bidding; and (2) General/Prime Contractor bidding. These instructions cover all work as documented in the attached bid documents, as modified by addenda, if any (collectively, the "Bid Documents"). The work outside of the publicly bid sub-trades will be awarded to a General/Prime Contractor. After the sub-bids are opened and reviewed, the tabulation of bids of sub-bidders in each publicly bid trade will be distributed to Prime/General Contractors. Prime/General Contractors will include publicly bid sub-trades in their bid. The City's form of Owner-Contractor Agreement and the form of subcontract is included with these Bid Documents. It is the intent of the project to have the HVAC contractor act as Prime, they are to be certified by DCAMM as a general contractor, in this document Prime and General Contractor shall refer to the HVAC contractor acting as a general contractor.

Every General Bidder must be certified by the Division of Capital Asset Management ("DCAMM") in the category of General Contractor for the dollar amount of their Bid. General Bids will be valid only when accompanied by a valid and current Certificate of Eligibility and Contractor Update Statement summarizing the General Bidder's record for the period between the latest DCAMM certification and the date the contractor submits its Bid. Every Sub-bidder must be certified by the DCAMM for the dollar amount of their sub-bid. Sub-bids will be valid only when accompanied by a Certificate of Eligibility and an Update Statement.

Bidders submitting bids for Prime/General Contractor Services shall submit a Bid that shall include all of the required items on the enclosed forms.

Bidders submitting bids for Subcontractor Services shall submit a Bid that shall include all of the required items on the enclosed forms, including but not limited to, a proposed lump sum price for the sub-trade's scope of work. The cost of performance and labor and materials bonds shall be set forth separately as a unit price. The selected sub-trade bids, when combined with the selected General Contractor bids, will establish the Stipulated Sum for the entire project.

Each Bid proposal must be secured by an accompanying deposit of five (5) percent of the total amount of the Bid. Deposits shall be in the form of a bid bond, certified check, treasurer's or cashier's check payable to the City of Everett. No cash will be accepted. Bid deposits of all General Bidders, except those of the three lowest responsible and eligible Bidders, will be returned within five (5) days, Saturdays, Sundays, and legal holidays excluded, after the opening of General Bids. The bid deposits of the three lowest responsible and eligible General Bidders shall be returned upon the execution and delivery of the General Contract or, if no award is made, then at the expiration of thirty (30) days after the opening of the bids, Saturdays, Sundays, and legal holidays excluded, unless forfeited by failure to sign the Contract. In case of refusal or failure to enter into the proposed contract or furnish required bonds as stated in its Bid, the Bidder shall forfeit the bid deposit and the amount shall become the property of the City as liquidated damages, provided that the amount of the bid deposit subject to forfeiture shall not, in any event, exceed the difference between the Bidder's price and the bid price of the next lowest responsible and responsive Bidder.

A BIDDER MAY NOT, IN ITS PROPOSAL, TAKE EXCEPTION TO THE FORM OF OWNER-CONTRACTOR AGREEMENT OR OTHERWISE CONDITION ITS PROPOSAL ON CHANGES TO THE FORM OF OWNER-CONTRACTOR AGREEMENT. THE BIDDERS TO WHOM CONTRACTS ARE AWARDED WILL BE REQUIRED TO ENTER INTO THE CITY FORM OF OWNER-CONTRACTOR AGREEMENT OR THE STATUTORY FORM OF SUBCONTRACT AGREEMENT, AS APPROPRIATE, WITHIN FIVE (5) BUSINESS DAYS OF PRESENTATION OF THE CONTRACT BY THE CITY.

SCHEDULE OF BID PROCESS:

- Bid Documents available to Bidders: 9/23/2026 at 2:00 PM
- Pre-Bid Conference: 9/30/2026 at 548 Broadway, meet at main entrance off Broadway

- Question/Clarification Period closes:
  - For Subcontractors: 10/1/2026 at 4:00 PM
  - For General Contractors: 10/8/2026 at 4:00 PM

- Bid Submission Deadline:
  - For Subcontractors: 10/7/2026 at 2:00PM at Everett City Hall, Purchasing Dept, Room 14, 484 Broadway, Everett, MA 02149.
  - For General Contractors: 10/14/2026 at 2:00PM at Everett City Hall, Purchasing Dept, Room 14, 484 Broadway, Everett, MA 02149.

BIDDER'S REPRESENTATIONS:

Each Bidder by making a proposal or Bid represents that:

1. The Bidder has read and understands the Bid Documents and the Bid is made in accordance therewith. The Bidder has visited the site where the Work is to be performed and is familiar with the local conditions under which the Work will be performed. Failure to so examine the Bid Documents and site will not relieve any Bidder from any obligation under the Bid as submitted.

2. The information contained in the Bid is true and complete.

3. The Bid has been prepared in good faith and has been duly and properly authorized for submission on behalf of the Bidder.

4. In preparation and development of the Bid, the Bidder has not, directly or indirectly, solicited or received any advice, assistance, or information concerning the Project from any representative of the City, its agents, or consultants which was not issued in writing by the City to all Bidders.

5. The Bidder has filed with the Secretary of State all certificates and annual reports required by Chapter 156D, section 16.22 (domestic and foreign corporation),

Section 15.03 (foreign corporations), Section 109 (Massachusetts business corporation), or Chapter 180, Section 26A (non-profit corporation) as applicable, of the Massachusetts General Laws.

REQUESTS FOR INTERPRETATION:

Bidders shall promptly notify the City in writing of any ambiguity, inconsistency or error, which they may discover upon examination of the Bid Documents, the site, and local conditions.

Bidders requiring clarification or interpretation of the Bid Documents shall make a written request to the Architect with a copy of the City by email as follows:

ARCHITECT:

Daniel T. Colli, AIA
Perkins Eastman, DPC
20 Ashburton Street, 8th Floor
Boston, Massachusetts, 02108
Email: d.colli@perkinseastman.com

COPY:

Kiara M. Freeman, Chief Procurement Officer
Everett City Hall, Purchasing Dept.
484 Broadway, Room 14
Everett, Massachusetts, 02149
Email: Kiara.Freeman@ci.everett.ma.us

Requests via phone will not be accepted. Any responses to written questions will be issued as an addendum to the Bidding Documents. The City will not be responsible for, and a Bidder may not rely upon or use as the basis of any claim or protest against the City or a consultant of the City, any information, explanation or interpretation of this Invitation to Bid/Instructions to Bidders rendered in any fashion except as explicitly herein provided.

It is the sole responsibility of Bidders to ascertain the existence of any and all Addenda. Only written Addenda issued as described in these Instructions to Bidders shall be effective to modify the Bid Documents.

Any Bidder that contacts directly or indirectly any member or employee of the City, or the City's consultants, in connection with the selection process or the contract contemplated herein, other than by participation in the pre-bid conference, submission of a written question or request for clarification or interpretation as prescribed in this section, may be subject to disqualification and rejection of its Bid.

PREPARATION AND SUBMISSION OF BIDS:

Bids shall be submitted on the appropriate Bid Form attached hereto.

- All entries on the Bid Form shall be made by typewriter or in ink or electronically as specified.
- No modifications should be made to the Bid Forms.
- Sums shall be expressed in both words and figures in the space indicated on the Bid form. Where there is a discrepancy between the bid sum expressed in words and the bid sum expressed in figures, the words shall control.
- If the requirement of Performance and Payment Bonds for filed subcontractors is left blank by the General Bidder on the Form for General Bid, the Awarding Authority shall interpret this as a "yes". No increase in contract price will be allowed for providing these bonds.
- Costs for subcontractor's bond premiums shall be paid for by the General Contractor in accordance with M.G.L. c. 149, § 44F.
- Total lump sum price will be basis of award regardless of any mathematical errors by bidders.
- For subcontractors bidding multiple trades, each subtrade must be submitted on a separate bid form.

Bids shall be enclosed in a **sealed envelope** with the following plainly marked on the outside:

Bid for: **Kiara M. Freeman, Chief Procurement Officer**
Everett City Hall, Purchasing Department, Room 14
Everett, MA, 02149

Project Number MUN-27-41
Trade Name, if applicable
Bidder's Name, Business Address, and Phone Number

Bids must be received at Everett City Hall, Purchasing Dept, 484 Broadway, Room 14, Everett, MA 02149 on or before 10/7/2026 at 2:00PM for Filed Sub-Contractors and on or before 10/14/2026 at 2:00PM for General Contractors. Timely delivery of a Bid to the location designated shall be the full and sole responsibility of Bidder.

WITHDRAWAL OF BIDS:

Any Bid may be withdrawn (retracted) prior to the time designated for receipt of bids upon written request made to the City of Everett. Withdrawal of Bids must be confirmed over the Bidder's signature by written notice post-marked or sent by facsimile or electronic mail on or before the

date and time set for receipt of Bids. Withdrawn Bids may be modified and resubmitted up to the time designated for the receipt of Bids.

EVALUATION PROCESS:

The City will evaluate all Bids in accordance with the provisions of the Bid Documents and the criteria described below. The City may consider all information contained in the Bidder's DCAM Qualifications Statement and the Bid, and any other information obtained or received by the City. Any Proposal from a Bidder that is determined to be nonresponsive or unacceptable may be rejected. Bids that are deemed to be unrealistic insomuch as the price proposed, in the judgment of the City, substantially deviates from the City's estimate of cost to complete all of the Work, or portion thereof, will be considered as not responsive to the Invitation to Bid and may be rejected at the sole discretion of the Authority.

The City will award the contract in accordance with the "CONTRACT AWARD" section below. Before award, the City may first conduct interviews with selected Bidders. The purpose of the interviews will be to clarify and assure understanding of the contents of the Bid, as well as the requirements of the Bid Documents and the contract, discuss deficiencies or uncertainties in the Bid, discuss cost and fee information, and discuss any other matters relevant to such Bid as the City may determine appropriate. No statements made or actions taken by any representative of the City during such discussions shall be binding on the City. If requested by the City, some or all of the key personnel identified in the Bidder's DCAMM Qualifications Statement or Bid will be required to participate in the discussions or to be available for an interview with City representatives.

EVALUATION CRITERIA

The criteria listed below are the criteria that will be applied to evaluate the Bids.

A. Price Proposal

Award will be to the lowest responsive and responsible Bidder with selected alternates provided that all required documents listed below are attached and satisfactory. The City may consider in its evaluation the reasonableness of the prices proposed by the Bidder.

B. Required Documents to be Submitted for Bidding

1. Bid Form.

2. Bid Deposit of 5% of the total bid amount (bid bond, certified check, or treasurer's or cashier's check payable to the City of Everett).

3. A proposed construction schedule showing all work included in the Bid. The proposed construction schedule must include key milestones including completion, commissioning, inspections, and occupancy.

4. DCAMM Update Statement and Certificate of Eligibility.

5. General Contractor or Subcontractor Bid Certifications, as appropriate.

C. Contractor Capacity Requirements
To ensure the contractor can complete the required window, bidders must submit: ENTER TEXT,

CONTRACT AWARD:

The City will open Bids on the Bid Due Date immediately following the Bid Submission Deadline. Bids will be read publicly, and a register will be maintained of those firms submitting timely Bids.

The City will award the Prime Contract and Subcontract(s) to the lowest responsible and eligible bidder in each trade category within thirty (30) days after the opening of Bids. The selected Bidders will be notified in writing.

If a selected Bidder fails or refuses to execute the Owner-Contractor Agreement or Subcontractor Form of Agreement in the form included in the Bid Documents, as modified by addenda, if any, and furnish the other documents required in connection with execution of the contract, within five (5) business days after the presentation of the Owner-Contractor or Subcontractor Agreement, as applicable, by the City, the City may award the contract to another bidder.

THE CITY RESERVES THE RIGHT TO REJECT ANY AND ALL BIDS if it determines that such action is in the best interest of the City. Any Bid which is incomplete, conditional or obscure may be considered invalid and the City may reject such Bid. In addition, the City may reject any Bid which is not prepared and submitted in accordance with all requirements of these Bid Documents and the attached forms or which contains alterations, contingencies or additions not called for or errors or irregularities of any kind; PROVIDED, HOWEVER, that the City reserves the right to waive any and all informalities or minor irregularities contained in the Bid. If these Bid Documents, the Bid Forms, or any other document or applicable law requires submission of certain information or other items as a part of or to accompany Bids and any Bidder neglects to furnish such information or other items with its Bid, the City may reject the Bid of such Bidder as incomplete; PROVIDED, HOWEVER, that the City reserves the right to deem any such omission as an informality for which such Bid will not be rejected, and to subsequently receive such information or other items prior to award of the contract.

As used herein, the term “lowest responsive and responsible bidder” shall mean the Bidder whose Bid is the lowest of those Bidders demonstrably possessing the skill, ability, and integrity necessary for the faithful performance of the work described in the Bid documents, and who shall certify that they are able to furnish labor that can work in harmony with all other elements of labor

employed or to be employed on the work. The City may consider the reasonableness of the prices proposed for the scope of the work involved in its evaluation of the Bids.

The City reserves the right to amend these Bid Documents at any time. Any amendments to these Bid Documents shall be issued by means of addenda. All addenda so issued shall become part of these Bid Documents.

The City reserves the right to withdraw this Invitation to Bid at any time in its sole discretion before award of a contract.

The City assumes no responsibility for the costs incurred by the Bidders in the preparation of a Bid or any related activities. The Bid Documents and this ITB/Instructions to Bidders have been prepared solely to solicit Bids, and are not contract offers. The only documents that may be binding on the City is the **Owner-Contractor Agreement** duly executed by the City and the selected general contractor.

COUNCIL APPROVAL

In all cases, the award of the contract shall be subject to the approval of the Members of the Everett City Council in public meeting.

INFORMATION

The City's receipt or discussion of any information (including information contained in the proposal and any ideas or other material communicated or exhibited by the Bidder or on its behalf) shall not impose any obligation whatsoever on the City or entitle the Bidder to any compensation therefor, except to the extent specifically provided in such written agreement as may be entered into between the City and the Bidder. Any such information given to the City before, with, or after submission of the proposal, either orally or in writing, except as noted below, is not given in confidence, and may be used, or disclosed to others, for any purpose at any time without obligation or compensation and without liability of any kind whatsoever. Any statement which is inconsistent with the terms of this paragraph, whether made as part of or in connection with any information received from the Bidder or made at any other time in any fashion, shall be void and of no effect.

ATTACHMENTS

This IFB includes the following attachments:

Attachment A – List of Filed-Sub Trades
Attachment B – Sample Bid Form - General Contractor Services
Attachment C – General Bid Certifications
Attachment D – Sample Bid Form - Sub-Contractor Services
Attachment E – Subcontractor Bid Certifications

CITY OF EVERETT, MASSACHUSETTS

CITY Project Number: MUN-27-41

548 Broadway Mechanical Repairs

ATTACHMENT A

List of Filed-Sub Trades

- **22 0000 – Plumbing**
- **26 0000 – Electrical**

CITY OF EVERETT, MASSACHUSETTS

City Project Number: MUN-27-41

548 Broadway Mechanical Repairs

ATTACHMENT B

Sample Bid Form – Prime Contractor Services

CITY OF EVERETT, MASSACHUSETTS

City Project Number: MUN-27-41

548 Broadway Mechanical Repairs

FORM FOR GENERAL BID

Firm's Name: _____

(A) The Undersigned proposes to furnish all labor and materials required for the 548 Broadway Mechanical Repairs in accordance with the accompanying plans and specifications prepared by Perkins Eastman, DPC for the contract price specified below, subject to additions and deductions according to the terms of the specifications.

(B) This Bid includes addenda numbered _____

(C) The proposed fixed contract price is _____ dollars

($_____).

(D) The subdivision of the proposed contract price is as follows:

Item 1. The work of the general contractor, being all work other than that covered by Item 2.

$_____

Item 2. Sub-bids as follows: $_____

Section	Sub-Trade	Name of Sub-Bidder	Amount	*Bonds Required Indicated by Yes or No

* Bond Price is to be included in the "The Work of The General Contractor" Line 1 and "The Proposed Contract Price" Line C

The undersigned agrees that each of 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 for the performance and payment bonds furnished by sub-bidders as requested herein and that all of the cost of all such premiums is included in the amount set forth in Item 1 of this Bid.

The undersigned agrees that if he is selected as general contractor, he will promptly confer with the City on the question of sub-bidders; and that the City may substitute for any sub-bid listed above a sub-bid filed with the City 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-bidders at the amounts named in their respective sub-bids and be in every way as responsible for them and their work as if they had been originally named in this general bid, the total contract price being adjusted to conform thereto.

(E) 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 City, execute a contract in accordance with the terms of this Bid and furnish a performance bond and also a labor and materials payment bond, each of a surety company qualified to do business under the laws of the Commonwealth and satisfactory to the City 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.

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 forty-four A.

(F) 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; that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and that he will comply fully with all laws and regulations applicable to awards of subcontracts subject to section 44F.

The undersigned further certifies under the 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 in this subsection the word “person” shall mean any natural person, joint venture, partnership, corporation or other business or legal entity. The undersigned further certifies under penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the commonwealth under the provisions of section twenty-nine F of chapter twenty-nine, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder.

The undersigned certifies that there have been no substantial changes to its financial position or business organization since its most recent DCAMM update statement.

Date: _____

_____
Name of Contractor - General Bidder

_____
Signature

_____
Title & Name of Person Signing Bid

_____
Business Address

_____
City and State

_____
State of Incorporation

_____
Telephone

_____
Facsimile

_____
Email

_____
Taxpayer ID#

Attach: DCAMM Certificate of Eligibility
DCAMM Update Statement
List of Completed Construction Projects Submitted most recently to DCAMM
Proposed Construction Schedule
Bid Deposit
General Bid Certifications

CITY OF EVERETT, MASSACHUSETTS

City Project Number: MUN-27-41

548 Broadway Mechanical Repairs

ATTACHMENT C

General Bid Form Certifications

CITY OF EVERETT, MASSACHUSETTS

City Project Number: MUN-27-41

548 Broadway Mechanical Repairs

GENERAL BID CERTIFICATIONS

Certification Regarding Labor: The undersigned hereby certifies under penalties of perjury that: (i) that all employees to be employed in the work included in this Bid have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least ten (10) hours in duration; and (ii) any employee found on worksite subject to this Bid without documentation of successful completion of a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least ten (10) hours in duration shall be subject to immediate removal.

Certification Regarding Financial Position/Business Organization: The undersigned certifies under penalty of perjury that there have been no substantial changes to its financial position or business organization since its most recent DCAMM update statement.

Certification Regarding Tax Compliance: The undersigned further certifies under penalty of perjury that the said undersigned has complied with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting of child support pursuant to the provisions of M.G.L. c. 62C, §49A(b).

Certification of Compliance of Secretary of State Requirements: The undersigned further certifies under penalty of perjury that the Bidder has filed with the Secretary of State for the Commonwealth of Massachusetts all certificates and annual reports required by Chapter 156B, Section 109 (business corporation), by Chapter 181, Section 4 (foreign corporation), or Chapter 180, Section 26A (non-profit corporation) of the Massachusetts General Laws.

Certification Regarding Non-Collusion: The undersigned further certifies under penalty of perjury that this Bid has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individuals.

Certification Regarding Prevailing Wage Compliance: The undersigned further certifies under penalty of perjury that the said undersigned shall comply with the provisions of sections 26 and 27D of chapter one hundred and forty-nine of the General Laws governing the payment of prevailing wages.

[SIGNATURE ON FOLLOWING PAGE]

Date: _____

_____
Name of Contractor- General Bidder

_____
Signature

_____
Title & Name of Person Signing Bid

_____
Business Address

CITY OF EVERETT, MASSACHUSETTS

City Project Number: MUN-27-41

548 Broadway Mechanical Repairs

ATTACHMENT D

Sample Bid Form – Subcontractor Services

Section 00420

CITY OF EVERETT, MASSACHUSETTS

City Project Number: MUN-27-41

548 Broadway Mechanical Repairs

FORM FOR SUB- BID

Submitted by (Firm's Name):_____

Name of Sub-Trade:_____

To all General Bidders Except those Excluded:

(A) The undersigned proposes to furnish all labor and materials required for completing, in accordance with the hereinafter described plans, specifications and addenda, all the work specified in Section No. _____ of the specifications and in any plans specified in such section, prepared by **Perkins Eastman, DPC** for the **548 Broadway Mechanical Repairs** in Everett, Massachusetts, for the fixed contract sum of

_____ dollars ($_____).

(B) This sub-bid includes addenda numbered _____

(C) This sub-bid (check one):

__ may be used by any General Bidder except:
_____
_____

__ may only be used by the following General Bidders:
_____
_____

__ No General Bidders are excluded.

(D) 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 selected General Bidder, 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 the General Bidder, who shall pay the premiums therefore, or if prequalification is required pursuant to MGL c. 149, section 44D 3/4, furnish a performance and payment bond of a surety company qualified to do business under the laws of the Commonwealth and satisfactory to the City, in the full sum of the subcontract price.

(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 provision 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
NOT APPLICABLE

(F) The undersigned agrees that the above list of bids to the undersigned represents bona fide bids based on the hereinbefore described plans, 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 City.

(G) The undersigned further agrees to be bound to the general contractor by the terms of the hereinbefore described plans, 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.

(H) The undersigned offers the following information as evidence of his qualifications to perform the work as bid upon according to all the requirements of the plans and specifications:—

(1) Have been in business under present business name _____ years.

(2) Ever failed to complete any work awarded? _____

(3) List one or more recent buildings with names of the general contractor and architect on which you served as a sub-contractor for work of similar character as required for the above-named building.

_____

_____

(4) Bank reference _____

(I) 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; that all employees to be employed at the worksite will have successfully completed a course in construction safety and

health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and that he will comply fully with all laws and regulations applicable to awards of subcontracts subject to section 44F.

The undersigned further certifies under penalties of perjury that this sub-bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity. The undersigned further certifies under penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the commonwealth under the provisions of section twenty-nine F of chapter twenty-nine, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder. The undersigned certifies that there have been no substantial changes in its financial position or business organization since its most recent update statement.

Date _____

_____
(Name of Sub-bidder)

By _____
(Title and Name of Person Signing Bid)

_____
(Business Address)

_____
(City and State)

Attach: DCAMM Certificate of Eligibility
DCAMM Update Statement
Proposed Construction Schedule
Bid Deposit
Subcontractor Bid Certification

CITY OF EVERETT, MASSACHUSETTS

City Project Number: MUN-27-41

548 Broadway Mechanical Repairs

ATTACHMENT E

Subcontractor Bid Certification

CITY OF EVERETT, MASSACHUSETTS

City Project Number: MUN-27-41

548 Broadway Mechanical Repairs

SUBCONTRACTOR BID CERTIFICATIONS

Certification Regarding Labor: The undersigned hereby certifies under penalties of perjury that: (i) that all employees to be employed in the work included in this Bid have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least ten (10) hours in duration; and (ii) any employee found on worksite subject to this Bid without documentation of successful completion of a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least ten (10) hours in duration shall be subject to immediate removal.

Certification Regarding Financial Position/Business Organization: The undersigned certifies under penalty of perjury that there have been no substantial changes to its financial position or business organization since its most recent DCAMM update statement.

Certification Regarding Tax Compliance: The undersigned further certifies under penalty of perjury that the said undersigned has complied with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting of child support pursuant to the provisions of M.G.L. c. 62C, §49A(b).

Certification of Compliance of Secretary of State Requirements: The undersigned further certifies under penalty of perjury that the Bidder has filed with the Secretary of State for the Commonwealth of Massachusetts all certificates and annual reports required by Chapter 156B, Section 109 (business corporation), by Chapter 181, Section 4 (foreign corporation), or Chapter 180, Section 26A (non-profit corporation) of the Massachusetts General Laws.

Certification Regarding Non-Collusion: The undersigned further certifies under penalty of perjury that this Bid has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individuals.

Certification Regarding Prevailing Wage Compliance: The undersigned further certifies under penalty of perjury that the said undersigned shall comply with the provisions of sections 26 and 27D of chapter one hundred and forty-nine of the General Laws governing the payment of prevailing wages.

[SIGNATURE ON FOLLOWING PAGE]

Date: _____

_____
Name of Contractor- Subcontract Bidder

_____
Signature

_____
Title & Name of Person Signing Bid

_____
Business Address

CITY OF EVERETT, MASSACHUSETTS

City Project Number: MUN-27-41

548 Broadway Mechanical Repairs

CONTRACTING REQUIREMENTS

Form of Performance Bond and Payment Bond (A312-2010)

AIA® Document A312™ – 2010

Performance Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

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

OWNER:
(Name, legal status and address)

CONSTRUCTION CONTRACT
Date:

Amount:

Description:
(Name and location)

BOND
Date:
(Not earlier than Construction Contract Date)

Amount:

Modifications to this Bond: ☐ None ☐ See Section 16

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:		Name and Title:	

(Any additional signatures appear on the last page of this Performance Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or **BROKER:**

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

Sample

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§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

.1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

.2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

.3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

Sample

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§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

.2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and

.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 14 Definitions

§ 14.1 Balance of the Contract Price. The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 Contractor Default. Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

Sample

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§ 16 Modifications to this bond are as follows:

Sample

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:		Name and Title:	
Address		Address	

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AIA® Document A312™ – 2010

Payment Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

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

OWNER:
(Name, legal status and address)

CONSTRUCTION CONTRACT
Date:

Amount:

Description:
(Name and location)

BOND
Date:
(Not earlier than Construction Contract Date)

Amount:

Modifications to this Bond: ☐ None ☐ See Section 18

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:		Name and Title:	

(Any additional signatures appear on the last page of this Payment Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or **BROKER:**

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

Sample

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§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

- **.1** have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
- **.2** have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

Sample

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§ 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

§ 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

- **.1** the name of the Claimant;
- **.2** the name of the person for whom the labor was done, or materials or equipment furnished;
- **.3** a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- **.4** a brief description of the labor, materials or equipment furnished;
- **.5** the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- **.6** the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- **.7** the total amount of previous payments received by the Claimant; and
- **.8** the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

Sample

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§ 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

Sample

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:		Name and Title:	
Address		Address	

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Document 00 4546.19 Executive Order 481 – Contractor Certification

1.1 PROHIBITNG THE USE OF UNDOCUMENTED WORKERS

A. The certification form entitled “Commonwealth of Massachusetts, Executive Order 481 - Contractor Certification, Prohibitng the Use of Undocumented Workers on State Contracts,” **as attached to this Document,** is required to be submitted with the signed Contract.

END OF DOCUMENT

Issued March 2007

COMMONWEALTH OF MASSACHUSETTS

EXECUTIVE ORDER 481 - CONTRACTOR CERTIFICATION

PROHIBITING THE USE OF UNDOCUMENTED WORKERS ON STATE CONTRACTS

CONTRACTOR LEGAL NAME:
CONTRACTOR VENDOR/CUSTOMER CODE:

INSTRUCTIONS:

Executive Order 481 applies to all state agencies in the Executive Branch, including all executive offices, boards, commissions, agencies, departments, divisions, councils, bureaus, and offices, now existing and hereafter established. As it is the policy of the Executive Branch to prohibit the use of undocumented workers in connection with the performance of state contracts, all contracts entered into after February 23, 2007 require that contractors, as a condition of receiving Commonwealth funds under any Executive Branch contract, make the following certification:

CONTRACTOR CERTIFICATION:

As evidenced by the signature of the Contractor's Authorized Signatory below, the Contractor certifies under the pains and penalties of perjury that the Contractor shall not knowingly use undocumented workers in connection with the performance of all Executive Branch contracts; that pursuant to federal requirements, the Contractor shall verify the immigration status of all workers assigned to such contracts without engaging in unlawful discrimination; and that the Contractor shall not knowingly or recklessly alter, falsify, or accept altered or falsified documents from any such worker(s). The Contractor understands and agrees that breach of any of these terms during the period of each contract may be regarded as a material breach, subjecting the Contractor to sanctions, including but not limited to monetary penalties, withholding of payments, contract suspension or termination.

_____ Date: _____
Contractor Authorizing Signature

_____
Print Name

Title:_____ Telephone: _____

Fax: _____ Email: _____

The Contractor is required to sign this Certification only once and may provide a copy of the signed Certification for any contract executed with an Executive Branch Department. A copy of this signed Certification must be attached to the "record copy" of all contracts with this Contractor that are filed with the contracting Department.

Document 00 5200 FORM OF CONTRACT BETWEEN OWNER AND CONTRACTOR

1.1 FORM OF CONTRACT BETWEEN OWNER AND CONTRACTOR

A. The sample contract follows consisting of 25 pages.

END OF DOCUMENT

CITY OF EVERETT, MASSACHUSETTS

AGREEMENT BETWEEN OWNER AND CONTRACTOR

This **AGREEMENT** (the "Agreement") is made and entered into as of the ___ day of ____, 20__ by and between the Owner and the Contractor in connection with the Project, all as defined below, pursuant to the applicable provisions of Massachusetts General Laws, Chapter 30, § 39M and Chapter 149, §§ 44A-44H.

Owner: **City of Everett, Massachusetts**
Everett City Hall
484 Broadway, Room 14
Everett, Massachusetts 02149

Contractor: _____
_____
_____

Project: _____
(City Project No. _____)

Site: _____

Architect: _____

Architect's Representative: _____

Owner's Project Manager ("OPM"): _____

OPM's Representative: _____

Contractor's Project Team: **Project Executive:** _____
Project Manager: _____
Project Superintendent: _____

SAMPLE

In consideration of the mutual agreements and covenants of the Owner and the Contractor (collectively, the "Parties") set forth herein, the Parties hereby agree as follows:

ARTICLE 1

DEFINITIONS & EXHIBITS

1.1 Definitions. Capitalized terms not defined in this Agreement shall have the meanings defined elsewhere in this Agreement or in the General Conditions of the Contract for Construction or in other provisions of the Contract Documents. In the event of conflict in the definitions of capitalized terms, the definitions set forth in this Agreement shall take precedence followed by definitions in the General Conditions.

1.2 Exhibits. The following is a list of the documents which, when completed or provided, shall become exhibits to this Agreement, each of which is incorporated into this Agreement by reference and shall be deemed a part hereof:

Exhibit	Description
A	List of Specifications
B	List of Drawings
C	List of Addenda
D	Equal Employment Opportunity Requirements
E	Affirmative Action Requirements
F	Form of Project Workforce Monthly Report
G	Certificates of Insurance
H	Form of Subcontract
I	Performance and Payment Bonds
J	Insurance Requirements

1.3 Applicable Statutory Provisions. This Project is subject to certain statutory provisions. The applicable statutory provisions are enumerated in the General Conditions and in Division 00 of the Specifications and shall be deemed incorporated in the Contract Documents in their entirety to the extent such statutory provisions apply to this Project. Any other provisions required by statute to be included herein but not set forth in the Contract Documents shall be deemed to be so included. In case of a conflict between the provisions of the Contract Documents and the provisions of any applicable statute, the statutory provisions shall govern.

ARTICLE 2

THE WORK

2.1 Scope of the Work. The Work of the Project includes all labor, materials, equipment, tools, supplies, supervision, coordination, administration, and all other items or services required to fully complete the Project as described in the Contract Documents or as may be reasonably inferable therefrom. The Contractor shall fully execute the Work described in the Contract Documents, except to the extent specifically indicated in the Contract Documents to be the responsibility of others. The Contractor shall ensure that the Work is completed at a cost no greater than the Contract Sum, as further provided in Article 4 and elsewhere in the Contract Documents.

2.2 Contract Documents. The Contract Documents consist of this Agreement and the Exhibits hereto, the General Conditions of the Contract for Construction, the Supplementary General Conditions, if any, Drawings, Specifications, Change Orders, other written amendments to this Agreement duly executed by the Owner and the Contractor, Construction Change Directives, Architect's Supplemental Instructions, Performance Bond, Labor and Material Payment Bond, and all other documents set forth or incorporated by reference herein or elsewhere in the Contract Documents. The Contract Documents are all as fully a part of this Agreement as if attached to this Agreement and repeated herein and together constitute the "Agreement" or the "Contract." The Contract represents the entire and integrated agreement between the parties hereto and supersede prior negotiations, representations or agreements, either written or oral.

2.3 Representations. In addition to other representations set forth in the Contract Documents, the Contractor represents that it is a duly-licensed and registered business entity which is experienced and skilled in construction of projects of the type, magnitude, and complexity described in the Contract Documents and that it is familiar with the special problems, regulations, and requirements of construction of the type required hereunder. The Contractor further represents that it is fully cognizant of all aspects of the overall development of the Site as described by the Owner and of the relationship of the Project to such overall development, and that it will furnish, at a cost not to exceed the Contract Sum, a complete and fully operable Project as indicated by or reasonably inferable from the Contract Documents, capable of obtaining a full, permanent certificate of occupancy.

ARTICLE 3

CONTRACT TIME

3.1 The Contractor shall commence performance upon the issuance of a Notice to Proceed by the Owner for a portion, or all, of the Work. The period of time from the date of the initial Notice to Proceed to the Final Completion Date, together with any valid extensions thereof approved by the Owner in accordance with the Contract Documents, shall constitute the Contract Time. The Contractor shall achieve Substantial Completion of the entire Work on or before

_____. Final Completion of the entire Work shall be achieved fourteen (14) calendar days after the date of Substantial Completion.

3.2 The Contractor shall proceed to carry out the Work in a timely, diligent and continuous manner in accordance with the requirements of the Project Schedule and all other Contract Documents and in accordance with the directions of the Owner so as to ensure (i) Substantial Completion of the Work, or any specified portion thereof, on or before the Substantial Completion Date, and (ii) Final Completion of the Work, or any specified portion thereof, on or before the Final Completion Date, as such dates may be extended as provided in the Contract Documents.

3.3 It is understood and agreed that the time of commencement and the dates of Substantial Completion and Final Completion of the Work are material conditions of this Agreement, and that TIME IS OF THE ESSENCE of this Agreement.

ARTICLE 4

CONTRACT SUM

4.1 Contract Sum. The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract in accordance with the requirements of the Contract Documents. The Contract Sum is hereby established as _____ Dollars ($_____), subject to additions and deductions as provided in the Contract Documents.

4.2 Alternates. The Contract Sum is based on, and inclusive of, the following alternates:

No.	Description	Price
X	(Insert alternate description here)	$

4.3 Unit Prices. Unit prices, if any, applicable to this Contract are as follows:

No.	Description	Unit	Price
X	(Insert alternate description here)	per _____	$

4.4 Pricing of Alternates and Unit Prices. The Alternate Prices and Unit Prices specified shall include all services, labor, materials, supplies, equipment, transportation, taxes, insurance, bonds, permits and all other expenses, including overhead, superintendence and profit required to complete the alternate or unit price Work. Unless otherwise specified, the Alternate Prices and Unit Prices listed in this Article 4 shall be applicable to both increases and decreases in the Contract Sum on an equal basis.

4.5 Insurance. The Owner and Contractor shall purchase and maintain insurance and bonds in accordance with the requirements of the Contract Documents. The Contractor shall carry insurance coverages with limits no less than those identified on **Exhibit J**, attached hereto.

ARTICLE 5

PAYMENTS

5.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

5.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month.

5.3 Provided that an Application for Payment is received by the Architect not later than the 5th day of a month, the Owner shall make payment to the Contractor not later than the 30th day of the month. If an Application for Payment is received by the Architect after the application date fixed above, payment shall be made by the Owner not later than 25 days after the Architect certifies the Application for Payment.

5.3.1 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor as required by the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form and supported by such data to substantiate its accuracy as the Owner or the Architect may require. This schedule, once approved by the Owner and the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

5.3.2 Applications for Payment shall indicate the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

5.3.3 Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

(a) Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the Contract Sum allocated to that portion of the Work in the schedule of values, less retainage of percent (5%). Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included as provided in the Contract Documents;

(b) Add that portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing), less retainage of percent (5%);

(c) Subtract the aggregate of previous payments made by the Owner; and

(d) Subtract amounts, if any, for which the Architect has withheld or nullified a Certificate for Payment as provided in the Contract Documents.

5.3.4 The progress payment amount determined in accordance with this Article 5 shall be further modified under the following circumstances:

(a) Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to the full amount of the Contract Sum, less such amounts as the Architect shall determine for incomplete or defective Work, retainage applicable to such work and unsettled claims.

5.3.5 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

5.3.6 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when:

(a) the Contractor has fully performed the Contract and satisfied all requirements of the Contract Documents, except those contractual obligations that are required to be performed after final completion of the Project; and

(b) a Final Certificate for Payment has been issued by the Architect.

5.3.7 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or any longer period allowable under Applicable Laws.

ARTICLE 6

OTHER PROVISIONS

6.1 No Personal Liability. No member, officer, director, principal, joint venturer, beneficiary, trustee, representative, consultant, volunteer participant, employee, agent or representative of the Owner or the Contractor shall be personally liable to the other party under

any term or provision of this Contract for any payment obligations or otherwise, or because of any breach hereof, each party agreeing to look solely to the assets of the other party for the satisfaction of any liability hereunder.

6.2 Consequential Damages. In no event shall the Owner be liable to the Contractor except for payment for Work performed pursuant to and in accordance with the Contract Documents, nor shall the Owner ever be liable to the Contractor for indirect or consequential damages of any name or nature.

6.3 Termination or Suspension. This Agreement may be terminated or suspended as provided in Articles 16 and 17, respectively, of the General Conditions and as provided elsewhere in the Contract Documents.

6.4 Certification Relating to Tax Compliance. Pursuant to M.G.L. c. 62(c), § 49(a), the individual signing this Contract on behalf of the Contractor hereby certifies, under the penalties of perjury, that to the best of his or her knowledge and belief the Contractor has complied with any and all applicable state and federal tax laws.

6.5 Certification Relating to Debarment. The individual signing this Contract on behalf of the Contractor further certifies under penalties of perjury that the Contractor is not presently debarred from doing public construction work in the Commonwealth under the provisions of M.G.L. c. 29, § 29F, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder and is not presently debarred from doing public construction work by any agency of the United States.

6.6 Certification Relating to Health and Safety (M.G.L. c. 30, § 39S). The individual signing this Contract on behalf of the Contractor further certifies: (1) Contractor is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the Work; (2) 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 the Contractor shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and (3) that all employees to be employed in the Work subject to this Contract 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.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement under seal in multiple counterparts, each of which shall be deemed to be an original hereof and collectively comprising a fully executed instrument, as of the date and year first above written.

CONTRACTOR

_____ _____
Name Date Signed
Title

CITY OF EVERETT:

_____ _____
Director Name Date Signed
Managing Department

_____ _____
Date Signed
Chief Procurement Officer

_____ _____
Date Signed
Chief Financial Officer/City Auditor

Approved as to Form:

_____ _____
Date Signed
City Solicitor

_____ _____
Date Signed
Mayor

EXHIBIT A

LIST OF SPECIFICATIONS

EXHIBIT B

LIST OF DRAWINGS

EXHIBIT C

LIST OF ADDENDA

EXHIBIT D

EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENTS

1. Definitions. For purpose of this contract, the term "minority" refers to Asian–Americans, Blacks, Spanish Surnamed Americans, North American Indians, and Cape Verdeans. The term "Commission" refers to the Massachusetts Commission Against Discrimination.

2. Obligations. During the performance of this contract, the Contractor and each of its subcontractors, and suppliers (hereinafter collectively referred to as the "Contractor") for themselves, their assignees, and successors in interest, agree as follows:

In connection with the performance of work under this contract, the Contractor shall not discriminate against any employee or applicant for employment because of race, color, religious creed, national origin, age, handicap or sex. The aforesaid provision shall include, but not be limited to, the following: employment upgrading, demotion, or transfer; recruitment advertising; recruitment layoff; termination; rates of pay or other forms of compensation; conditions or privileges of employment; and selection for apprenticeship. The Contractor shall post hereafter in conspicuous places on the project site, available for employees and applicants for employment, notices to be provided by the Commission setting forth the provisions of the Fair Employment Practices Law of the Commonwealth (M.G.L. Chapter 151B).

In connection with the performance of work under this contract, the Contractor, shall undertake, in good faith, affirmative action measures designed to eliminate any discriminatory barriers in the terms and conditions of employment on the grounds of race, color, religious creed, national origin, age or sex, and to eliminate and remedy any effects of such discrimination in the past. Such affirmative action shall entail positive and aggressive measures to ensure equal opportunity in the areas of hiring, upgrading, demotion or transfer, recruitment, layoff or termination, rate of compensation, and in-service or apprenticeship training programs. This affirmative action shall include all action required to guarantee equal employment opportunity for all persons, regardless of race, color, religious creed, national origin, age or sex. A purpose of this provision is to ensure to the fullest extent possible an adequate supply of skilled tradesmen for this construction project undertaken by the Owner.

As part of its obligation under the foregoing section, the Contractor shall use its best efforts to maintain on this project a not less than 10.4% of minority and women employee person hours to total person hours, and not less then 3% of Veteran Partcipation.

3. Compliance with Requirements. To the extent applicable, the Contractor shall comply with the provisions of Executive Order No. 526, which is herein incorporated by reference and made a part of this contract.

4. Solicitations for Trade Contractors or Subcontractors, and for the Procurement of Materials and Equipment. In all solicitations either by competitive bidding or negotiation made by the Contractor either for work to be performed under a subcontract or for the procurement of

materials or equipment, each potential trade contractor or subcontractor or supplier shall be notified in writing by the Contractor of the Contractor's obligations under this contract relative to equal employment opportunity, non-discrimination and affirmative action.

5. Compliance-Information, Reports and Sanctions. The Contractor will provide all information and reports required by the Owner, and the Contractor will permit access to its facilities and any books, records, accounts and other sources of information which may be determined by the Owner to affect the employment of personnel. Where information required is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to the Owner and shall set forth what efforts it has made to obtain the information. Without limiting the foregoing, the Contractor shall require all trade contractors and subcontractors to submit to the Contractor a Project Workforce Monthly Report, in the form attached to the Agreement between Owner and Contractor as **Exhibit F**. The Contractor shall submit the Project Workforce Monthly Reports to the Owner on a monthly basis, together with a summary report prepared by the Contractor, in a form satisfactory to the Owner, aggregating the information provided in the trade contractors' and subcontractors' Project Workforce Monthly Reports with the Contractor's own workforce information and showing the monthly and total Project-to-date ratios of minority and women workforce hours.

Whenever the Owner believes the Contractor or any trade contractor or subcontractor may not be operating in compliance with the terms of this Section, the Owner, or its designated agent, may conduct an appropriate investigation, and may confer with the parties, to determine if the Contractor is operating in compliance with the terms of this Section. If the Owner finds the Contractor or any trade contractor or subcontractor not in compliance, it shall make a preliminary report on non-compliance, and notify the Contractor in writing of such steps as will in the judgment of the Owner bring the Contractor into compliance.

6. Severability. The provisions of this Exhibit are severable, and if any of these provisions shall be held unconstitutional or unenforceable by any court of competent jurisdiction, the decision of such court shall not affect or impair any of the remaining provisions.

7. Equal Employment Opportunity for Persons with Disabilities. In connection with the performance of work under this contract, the Contractor, trade contractors, subcontractors and suppliers of goods and services shall not discriminate against persons with disabilities. Furthermore, the Contractor, trade contractors, subcontractors and suppliers of goods and services must give written notice of their commitments under this Exhibit to any labor union, association or brotherhood with which they have a collective bargaining contract or other agreement.

EXHIBIT E

AFFIRMATIVE ACTION REQUIREMENTS

During the performance of this contract, the Contractor and each of its subcontractors and suppliers (hereinafter collectively referred to as the "Contractor") for themselves, their assignees, and successors in interest, agree as follows.

1. Percentage Participation. On this contract, the Contractor shall use best efforts to enter into contracts and subcontracts including contracts with suppliers, distributors and manufacturers who are women/minority business enterprises. The Contractor shall use best efforts to enter into contracts worth a combined total 10.4% of the Contract Sum with W/MBE firms, and 3% with VBE firms. (Veteran Owned Business)

2. Definitions.

a. Women/minority business enterprise ("W/MBE") means any business organization certified by SDO as an MBE or WBE. To be certified as a W/MBE, the minority or women must demonstrate at least 51% ownership and control, according to SDO rules and regulations.

b. Joint Ventures -

(1) A joint venture between a certified W/MBE and non-minority or non-WBE shall be certified by SDO as a W/MBE if the certified W/MBE has at least 51% control over the management and receipt of profits of the project bid upon.

(2) A joint venture between a certified W/MBE subcontractor and a non-W/MBE subcontractor, in which the W/MBE does not exercise more than 51% control over management and profits, shall be entitled to a credit as a W/MBE for the proportion of the joint venture's contract equal to the W/MBE participation in the joint venture.

(3) Whenever a general bid is filed by a joint venture with a certified W/MBE participant in the joint venture that does not exercise more than 51% control over management and profits, that joint venture shall be entitled to credit as a W/MBE for the portion of the joint venture's price equal to the W/MBE participation in the joint venture.

(4) Whenever a joint venture with a certified W/MBE participant files a general bid or sub-bid, and requests a credit as a W/MBE, the bid must be accompanied by the pre-bid joint venture agreement for that project. SDO certified joint ventures should submit a copy of SDO certification.

c. Material Supplier - A vendor certified by SDO as a W/MBE engaged in sales to the construction industry from an established place of business or source of supply, which either:

(1) Manufactures goods from raw materials or substantially alters them before resale, entitling the Contractor to W/MBE credit for the full amount of the purchase order; or

(2) Maintains a storage facility for materials utilized in the work, entitling the Contractor to W/MBE credit for 10% of the purchase order.

d. Amount of Participation - The actual dollar amount which will be paid to W/MBE for work performed on this contract, in accordance with Section 2(b) and 2(c).

e. Contractor - Any successful general bidder to whom the Owner makes the contract award.

f. SDO - The Massachusetts Supplier Diversity Office.

g. Owner - The City of Everett, Massachusetts.

h. VBE - Veteran Business Enterpise

3. Determination of W/MBE Status.

a. Any Contractor subcontractor, sub–subcontractor or material supplier may apply to SDO for W/MBE status. Applications must be made on the W/MBE application form prepared by SDO. The applicant may request a form from SDO.

b. SDO is responsible for preparing, publishing, and updating a list of certified Women and Minority Owned businesses. The list is published in the Central Register established by G.L. Chapter 9, Section 20A and is available from SDO. Bidders shall rely on the list that is most current at the time the work is advertised and shall use it as a reference source to assist in meeting the requirements of these conditions**.**

Submission of an application to SDO does not constitute certification.

EXHIBIT F

FORM OF PROJECT WORKFORCE MONTHLY REPORT

CITY OF EVERETT, MASSACHUSETTS

PROJECT WORKFORCE MONTHLY REPORT

City Project No._____ Project Name:_____ Project Location:_____

Name of Contractor Filing Report_____

Month Ending:_____ **Minority Participation Goal: 15.3%** **Women Participation Goal: 6.9%**

	Current Month					**Project To Date**				
Job Category	**Total Monthly Workforce Hours**	**Total Monthly Workforce Hours**		**Monthly % of Workforce Hours**		**Total Workforce Hours**	**Total Workforce Hours To Date**		**% of Workforce Hours To Date**	
		Minority	**Women**	**Minority**	**Women**		**Minority**	**Women**	**Minority**	**Women**

EXHIBIT G

CERTIFICATES OF INSURANCE

EXHIBIT H

FORM OF SUBCONTRACT

CITY OF EVERETT, MASSACHUSETTS

[PROJECT NUMBER]

[PROJECT NAME]

SUBCONTRACT

SUBCONTRACTOR SERVICES PURSUANT TO CHAPTER 149

THIS AGREEMENT MADE THIS ____ DAY OF _____, by and between _____, a corporation organized and existing under the laws of _____, as hereinafter called the "Contractor" and _____, a corporation organized and existing under the laws of _____, 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 plans referred to therein and addenda No. _____, _____, _____, and for the _____ (complete title of the project and the project number taken from the title page of the specifications) all as prepared by _____(Name of Architect or Engineer) for the sum of _____Dollars ($_____) and the Contractor agrees to pay the Subcontractor said sum for said work. This price includes the following alternates (and other items set forth in the sub–bid):

Alternate No(s). _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____.

(a) The Subcontractor agrees to be bound to the Contractor by the terms of the hereinbefore described plans; specifications (including all general conditions stated therein) and addenda No. _____, and _____, and _____, to assume to the Contractor all the obligations and responsibilities that the Contractor by those documents assumes to the City of Everett, Massachusetts 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.

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 workers' 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.

IN WITNESS WHEREOF, the parties hereto have executed this agreement the date and year first above–written.

GENERAL CONTRACTOR	**SUBCONTRACTOR**
_____	_____
Signature	Signature
_____ Name,	_____ Name,
Title	Title
SEAL	SEAL

4847-9622-4276.1

EXHIBIT I

PERFORMANCE AND PAYMENT BONDS

EXHIBIT J

INSURANCE REQUIREMENTS

CITY OF EVERETT, MASSACHUSETTS

City Project Number: XXX-XX-XX

PROJECT NAME

EXHIBIT J

CITY OF EVERETT, MASSACHUSETTS
STANDARD INSURANCE LIMIT REQUIREMENTS

The following minimum insurance limits shall apply to the Contract and be provided by the Contractor. The Contractor shall refer to the Contract Documents for all other insurance requirements relating to this Contract.

Coverage	Estimated Construction Cost	General Contractor
General Liability[1]	**-**	$1,000,000 per Occurrence/ $2,000,000 Aggregate
Auto[2]	**-**	$1,000,000 each accident
Worker's Compensation	**-**	Statutory
Employers Liability	**under $1m**	$500,000 Each Accident $500,000 Disease - Each Employee $500,000 Disease - Policy Limit
Employers Liability	**$1m and over**	$1,000,000 Each Accident $1,000,000 Disease - Each Employee $1,000,000 Disease - Policy Limit
Excess/Umbrella	**under $1m**	$2,000,000 Per Occurrence

[1] Must evidence per location aggregate or per project aggregate.

[2] Combined single limit

Coverage	Estimated Construction Cost	General Contractor
		$2,000,000 Aggregate or Higher
Excess/Umbrella	**between $1m and $5m**	$5,000,000 Per Occurrence $5,000,000 Aggregate or Higher
Excess/Umbrella	**under $10m**	$10,000,000 Per Occurrence $10,000,000 Aggregate or Higher
Excess/Umbrella	**$10m and over**	$20,000,000 Per Occurrence $20,000,000 Aggregate or Higher
Professional Liability	**under $5m**	$1,000,000 Per Occurrence $1,000,000 Aggregate or Higher
Professional Liability	**under $10m**	$2,000,000 Per Occurrence $2,000,000 Aggregate or Higher
Professional Liability	**$10m and over**	$5,000,000 Per Occurrence $5,000,000 Aggregate or Higher
Contractor's Pollution Liability	**-**	$5,000,000 per occurrence and $5,000,000 Annual Aggregate or higher.
Drone/UAV Aircraft Liability[3]	**-**	No less than $2,000,000

[3] Required only if the work of the vendor includes operation, or arranging for the operation, of unmanned aerial systems (i.e., drones) services.

Document 00 5433.13 Digital / Electronic Data Licensing Agreement

1.1 DATA LICENSING AGREEMENT

A. Perkins Eastman / DPC data licensing agreement follows.

Digital File Release

PERKINS EASTMAN

Project: Everett Task 5 - HVAC Repairs
Project No.: 109700.02

The undersigned Receiving Entity ("RE") owning, occupying, performing work, furnishing materials or providing services in connection with the above Project agrees to the following terms and conditions, which shall govern the undersigned's access to, receipt and use, solely in connection with the Project, of Digital Files prepared by Perkins Eastman DPC Architects its consultants, and sub-consultants ("Perkins Eastman DPC"):

1. **General**: Digital files furnished to RE in regard to the Project ("DIGITAL FILES"), including but not limited to Computer Aided Design (CAD) or Building Information Model (BIM) files may be used by RE for informational and reference purposes solely in connection with the RE's ownership of, occupancy of or performance of its independent contractual obligations with respect to the Project, pursuant to these Terms of Use and subject to the limitations set forth herein. RE may use, duplicate, modify, distribute or share the DIGITAL FILES only as permitted under these Terms of Use.

2. **Delivery of DIGITAL FILES**: DIGITAL FILES shall be made available to RE as a set containing a "live" file in native file format and a corresponding Adobe PDF file, encapsulating a fixed-layout, 2D view of the live file that includes the text, fonts, images, and 2D vector graphics. Contemporaneously with delivery to RE of the DIGITAL FILES, RE shall be advised of the software and version used to author the DIGITAL FILES and RE agrees to use the same software and version for its use of the DIGITAL FILES. RE agrees to maintain for the duration of the Project and for five (5) years thereafter a record copy of DIGITAL FILE, as furnished. No ownership right is conveyed in the content provided by PERKINS EASTMAN DPC for the DIGITAL FILES or in the software used to generate the content of the DIGITAL FILES.

3. **Format of Digital Files**: DIGITAL FILES, in the form of Autodesk Revit Building Information Model (BIM) files, will be formatted prior to transfer to RE in a manner so as to display certain information in pre-defined views ("PRE-DEFINED VIEWS") in the Project Browser.

4. **Reliance on Information Contained in DIGITAL FILES**: DIGITAL FILES furnished to RE prior to the completion of Construction Documents may not be relied upon for any purpose whatsoever, it being expressly acknowledged that the DIGITAL FILES are and remain subject to revision by PERKINS EASTMAN DPC during the process of creating Construction Documents for the Project, and any RE utilizing the DIGITAL FILES prior to such time does so entirely at its own risk. From and after the completion of Construction Documents, RE may rely on information displayed in the "PRE-DEFINED VIEWS" in the DIGITAL FILES but only to the extent such information is visible and identical to the two-dimensional copy of the completed Construction Documents displayed in the corresponding PDF file. All other information (i.e. that which differs from or is not rendered visible in the "PRE-DEFINED VIEWS" of the DIGITAL FILES and corresponding PDF file) shall be defined as "CONCEALED INFORMATION". CONCEALED INFORMATION may include, but is not limited to dimensions, coordinates, quantities, specifications, descriptions, performance criteria, code criteria, program criteria, tool paths, and other metadata. PERKINS EASTMAN DPC makes no representation as to, and takes no responsibility for, the accuracy, completeness, or suitability of CONCEALED INFORMATION for any purpose. RE shall verify, independently of information contained in DIGITAL FILES, any and all information contained in or absent from in DIGITAL FILES related to, or affecting in any way whatsoever, RE's understanding of or duties to the Project, RE's scope of work or RE's scope of services. Except as and to the extent explicitly set forth in these Terms of Use, RE may make use of, but is not to rely upon, the DIGITAL FILES and the data and/or information contained therein in owning, occupying, operating or altering the Project or in preparing, producing or developing any of RE's documents for the Project or for use in connection with the preparation of schedules or cost estimates.

5. **Use of CONCEALED INFORMATION**: RE's use of CONCEALED INFORMATION is permitted solely for purposes related to its services for the Project, including, but not limited to facilitating the RE's authoring of its own digital file for its own Project-related purposes. However, use of CONCEALED INFORMATION by RE, or by anyone acting for or on behalf of RE, prior to or after the completion of Construction Documents, shall be at RE's sole risk and responsibility.

6. **Re-Transmission of DIGITAL FILES by RE to Third Parties**: RE may retransmit DIGITAL FILES to third parties under contract to the RE and involved in the Project as Contractors or Sub-Contractors. RE shall require all such third parties to whom it furnishes DIGITAL FILES to sign and deliver to RE (and RE shall forward a copy to PERKINS EASTMAN DPC) a copy of these Terms of Use prior to furnishing DIGITAL FILES to any such party. The copy shall clearly identify the name of the RE, the third party to whom the DIGITAL FILES are being retransmitted, their relationship to the Project, and the purpose of the retransmission.

7. **Ownership**: Except as otherwise provided for in PERKINS EASTMAN DPC's agreement with the Project Owner, all information and intellectual property contained in DIGITAL FILES authored by PERKINS EASTMAN DPC is protected by copyright and remains the property of PERKINS EASTMAN DPC.

8. **No Warranties**: The DIGITAL FILES are not a part of the Construction or Contract Documents for the Project and PERKINS EASTMAN DPC makes no representations or warranties, expressed or implied, regarding the DIGITAL FILES or the accuracy, integrity, machine readability, suitability or completeness of the DIGITAL FILES or the data and/or information contained therein.

9. **Confidentiality**: All information contained in DIGITAL FILES, including CONCEALED INFORMATION and all other data and information contained within the DIGITAL FILES, as well as any customization or organization schema contained therein are and shall be treated as Confidential Information. RE shall (i) maintain such Confidential Information in strict confidence; (ii) not, directly or indirectly, reveal, report, publish or disclose any such Confidential Information to any person, firm or other entity to which RE is not expressly authorized hereby or in writing by PERKINS EASTMAN DPC; and (iii) not use, directly or indirectly, any such Confidential Information in any way or for any purpose except as and to the extent necessary for the performance of RE's Work or services for the Project and in accordance with these Terms of Use. Information shall not, however, be deemed confidential, provided that such information (a) can be demonstrated to have been publicly available at the time of disclosure; (b) can be demonstrated to have been properly in RE's possession or otherwise readily available to RE from another source, which is not itself bound to maintain such information as confidential, at the time of disclosure; (c) becomes part of the public domain or publicly known by publication or

otherwise, other than by an unauthorized act of RE or any other recipient of the Confidential Information; or (d) that is required to be disclosed in response to lawful process provided that in such circumstance RE shall give PERKINS EASTMAN DPC prompt notice of such process so PERKINS EASTMAN DPC has an opportunity to seek any appropriate judicial relief and RE shall take reasonable and lawful actions to avoid and/or minimize the disclosure of Confidential Information, including entering into appropriate confidentiality stipulations or agreements.

10. **Indemnity**: Notwithstanding anything to the contrary herein, to the fullest extent permitted by law, RE and its partners, affiliates, members, principals, shareholders, officers, directors, consultants, contractors, employees, agents, successors and assigns, shall, to the fullest extent permitted by law, defend, indemnify, and hold harmless PERKINS EASTMAN DPC and its respective agents, partners, principals, officers, shareholders, members, directors, consultants, employees, successors and assigns, from and against any and all losses, liabilities, demands, obligations, damages, penalties, actions, claims, changes, modifications, misuses, judgments, recoveries, costs or expenses (including but not limited to attorney's fees) whensoever asserted or occurring, whichever of them may suffer, incur, pay out, or which may be asserted against any of them, in whole or in part by reason of, in connection with, arising from, resulting from, or related to any use of the DIGITAL FILES and/or the information contained therein by the RE or any third party who receives the DIGITAL FILES from the RE. Such claims include without limitation, any claims which may arise due to deletions, omissions or variations of data due to mechanical or technical failure in connection with the transmission of the DIGITAL FILES or design changes which were not incorporated in the DIGITAL FILES.

11. **Cooperation**: If, as a result of its use of the DIGITAL FILES, RE becomes aware of any inconsistencies, discrepancies, errors, omissions or any other deficiencies or problems with the information contained in the DIGITAL FILES, RE shall promptly notify PERKINS EASTMAN DPC of same.

12. **Owner's Sole Benefit**: It is expressly acknowledged and agreed that PERKINS EASTMAN DPC's furnishing of DIGITAL FILES, whether before or after the completion of Construction Documents, is intended solely as an accommodation to and for the sole and exclusive benefit of the Project Owner and is not intended and shall not be deemed to be for the benefit of any other or third party or to create any contractual or quasi- contractual relationship between PERKINS EASTMAN DPC and any other or third party, including but not limited to RE or any other contractor or material supplier of any tier.

13. **Termination**: The rights granted hereby may be terminated by PERKINS EASTMAN DPC at any time with or without cause. PERKINS EASTMAN DPC will, in such event, notify RE of such termination in writing or via electronic mail, at which time RE shall immediately cease and desist from continuing to use the DIGITAL FILES. Within seven (7) days after the giving of such notice, RE shall destroy all physical copies and permanently erase all DIGITAL FILES from its computer systems and shall cause any third parties to which RE furnished the DIGITAL FILES to do the same.

14. **Applicable Law**: These Terms of Use and any disputes arising therefrom shall be governed by the internal laws of the State of New York, without giving effect to the choice of laws principles thereof. In the event of such dispute, the parties irrevocably consent to the exclusive jurisdiction of the state or federal court located in the County, City and State of New York.

15. **Acknowledgments**: By signing these Terms of Use, RE confirms that it has read, understood and agrees to the terms contained herein. The individual signing this document on behalf of the RE represents that s/he is duly authorized to bind the RE to the terms hereof. These Terms of Use, once executed and returned to PERKINS EASTMAN DPC, shall govern all future transfers of DIGITAL FILES, and need not be re-executed prior to each such transfer. RE further agrees that, before RE forwards DIGITAL FILES to third parties for their use in connection with the Project, RE shall first obligate each such third party to execute a copy of these Terms of Use, and shall deliver a duplicate original of such executed Terms of Use to PERKINS EASTMAN DPC.

Digital File Release

PERKINS EASTMAN

Acknowledged, agreed to and accepted by Receiving Entity:

_____

[Receiving Entity Name]

_____

Name

Title Date

Use Space Below for Retransmission by RE to Third Parties, and return copy to Perkins Eastman DPC

_____	_____
[Receiving Entity Name]	[Third Party Name]
_____	_____
Name	Name
Title	Title
Date	Date

_____

[Third Party relationship to Project]

_____

[Purpose for Retransmission]

Document 00 6211 Submittal Transmittal Form

Contractor: _____

Subcontractor: _____

Submittal Reference Number: _____

Submittal Title: _____

Specification Section, Page, and Paragraph Number: _____

Contract Drawing and Detail Reference: _____

Date of This Submittal: _____

Revision Number: _____

Date of First Submittal: _____

This Submittal Prepared By: _____

Check one of the following boxes:

☐ This submission is not a proposed substitution or deviation from the Contract Documents.

☐ This submission includes a proposed deviation from the Contract Documents as clearly identified in this submittal.

☐ This submission is a proposed substitution. A fully completed Substitution Request Form is attached.

LEED Documentation: (Check One)

☐ This submission involves LEED Credits. A fully completed LEED Materials Documentation Sheet is attached.

☐ This submission does not involve LEED Credits.

The undersigned attests that the undersigned has carefully examined this entire submission and that the requirements of the Contract Documents, including without limitation, specified referenced standards and other standards, have been met.

By: _____ _____
Signature Date

_____ _____
Printed or Typed Name Title

END OF DOCUMENT

Document 00 6313 Request for information (RFI) Form

1.1 REQUEST FOR INFORMATION (RFI)

A. The following attached form shall be used for this Contract:
   1. Request for Interpretation (RFIs): CSI Form 13.2A, "Request for Interpretation."

B. Related Requirements:
   1. Document 00 6325 "Substitution Request Form."
   2. Section 01 3100 “Project Management and Coordination” for administrative and procedural requirements for submitting RFIs.

END OF DOCUMENT

Knowledge for Creating and Sustaining the Built Environment

REQUEST FOR INTERPRETATION

Project: _____ R.F.I. Number: _____

_____ From: _____

To: _____ Date: _____

_____ A/E Project Number: _____

Re: _____ Contract For: _____

Specification Section: Paragraph: Drawing Reference: Detail:

Request:

Signed by: Date:

Response:

☐ Attachments

Response From: To: Date Rec'd: Date Ret'd:

Signed by: Date:

Copies: ☐ Owner ☐ Consultants ☐ _____ ☐ _____ ☐ _____ ☐ _____ ☐ File

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99 Canal Center Plaza, Suite 300, Alexandria, VA 22314

Form Version: July 1994
CSI Form 13.2A

Document 00 6325 Substitution Request Form

1.1 SUBSTITUTION REQUEST

A. The following attached form shall be used for this Contract:
   1. Substitution Request: CSI Form 13.1A, "Substitution Request."

B. Related Requirements:
   1. Document 00 6313 "Request For Information Form."
   2. Section 01 2500 "Substitution Procedures" for administrative and procedural requirements for substitutions.

END OF DOCUMENT

Knowledge for Creating and Sustaining the Built Environment

SUBSTITUTION REQUEST

(After the Bidding/Negotiating Phase)

Project: * Add project name

Substitution Request Number: (For Architect to fill in)

From: * Add your name & company name

To: * Add Architect, EOR or GC

Date: * Add request date

A/E Project Number: * Add if known

Re:

Contract For: * Add scope of contract

Specification Title: * Add title of spec book

Description: * Add section title from spec book

Section: * Spec section

Page: * Spec page

Article/Paragraph: * Add spec paragraph

Proposed Substitution:

Manufacturer: Phone:

Address:

Trade Name: Model No.:

Installer: * Add subs company name Phone: * Add subs phone

Address: * Add subs company address

History: ☐ New product ☐ 1-4 years old ☐ 5-10 years old ☐ More than 10 years old

Differences between proposed substitution and specified product:

☑ Point-by-point comparative data attached — REQUIRED BY A/E

Reason for not providing specified item:

Similar Installation:

Project: * Add a completed project

Architect: * Add name of architect of completed project

Address: * Add a completed project address

Owner: * Add name of owner of completed project

Date Installed: * Add date of completed project

Proposed substitution affects other parts of Work: ☐ No ☐ Yes; explain

Savings to Owner for accepting substitution: ($).

Proposed substitution changes Contract Time: ☐ No ☐ Yes [Add] [Deduct] days.

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐

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Form Version: June 2004
CSI Form 13.1A

SUBSTITUTION REQUEST

(After the Bidding/Negotiating Phase — Continued)

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by: * Add submitters name (typically the Project Manager for the Sub)

Signed by: _____

Firm: * Add submitters company name

Address: * Add submitters company address

_____

Telephone: * Add submitters company phone number

Attachments: ☐

* Add list of attachments

A/E's REVIEW AND ACTION

☐ Substitution approved - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials.

Signed by: _____ Date: _____

Additional Comments: ☐ Contractor ☐ Subcontractor ☐ Supplier ☐ Manufacturer ☐ A/E ☐ Other:

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Form Version: June 2004
CSI Form 13.1A

Document 00 7313 Tax Exemption Requirements

1.1 TAX EXEMPTION INFORMATION

A. Tax Exemption: Owner is exempt from payment of sales taxes on materials and products permanently incorporated into the Work.
   1. Owner will provide the necessary evidence and certificates of tax exemption on request for those concerned.

B. Records: Provide Owner with one copy of each purchase order, invoice, and receipt which used Owner's tax exemption certificate number.

C. Certification Required: Upon Contract completion, provide a notarized certification to Owner stating that all purchases made under Owner's tax exemption certificate number were legitimate, for this Contract, and entitled to the exemption.

D. Penalties: Pay all penalties assessed by authorities having jurisdiction for Contractor's improper or illegal use of Owner's tax exemption certificate number.

END OF DOCUMENT

Document 00 7200 GENERAL CONDITIONS

1.1 GENERAL CONDITIONS

A. The general conditions of the contract follow dated 9/15/2026 consisting of 90 pages.

END OF DOCUMENT

CITY OF EVERETT, MASSACHUSETTS

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

to the

AGREEMENT BETWEEN OWNER AND CONTRACTOR PURSUANT TO M.G.L. CHAPTER 149, §§ 44A-44H

September 15, 2026

by and between

CITY OF EVERETT, MASSACHUSETTS
AS OWNER

and

AS CONTRACTOR

City Project: #MUN-27-41

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GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

ARTICLE 1 DEFINITIONS; CONTRACT DOCUMENTS

1.1 DEFINITIONS

Wherever used in the Contract Documents, the following terms shall have the meanings indicated, which shall be applicable to both the singular and plural thereof. The order of the terms defined below is alphabetical, and is not intended to indicate any priority.

1.1.1 Affiliated Entities - Any entity related to or affiliated with the Contractor or any Subcontractor or with respect to which the Contractor or any Subcontractor has direct or indirect ownership or control, including without limitation, any entity owned in whole or in part by the Contractor or any Subcontractor, as applicable; any holder of any issued and outstanding shares of, or the holder of any interest in, the Contractor or any Subcontractor, as applicable; any entity in which any officer, director, partner, shareholder, member, or manager (or member of the family of any of the foregoing persons) has a direct or indirect interest, which interest includes, but is not limited to, that of a partner, shareholder, officer, director, member, manager, or agent.

1.1.2 Agreement – The fixed-price Agreement between Owner and Contractor.

1.1.3 Applicable Laws - As defined in Subsection 1.2.1.

1.1.4 "Approve", "approved" or "approval" means written approval by a duly authorized representative.

1.1.5 Architect - The Architect designated in the Agreement or its authorized representatives.

1.1.6 Architect's Supplemental Instructions - A written document issued by the Architect for clarification which may order a minor change in the Work and which does not require an adjustment in the Contract Sum and/or an extension of the Contract Time. The Architect's Supplemental Instructions shall be issued on AIA Document G710 or other form issued by or acceptable to the Owner.

1.1.7 Change Order - A written order prepared by the Architect, issued by the Owner to the Contractor and signed by the Owner, the Contractor and the Architect authorizing an addition to, deletion from or revision in the Work and any adjustment in the Contract Sum and/or Contract Time that may be required in accordance with the terms of the Contract. Change Orders shall be issued on AIA Document G701/2000 or other form issued by or acceptable to the Owner.

1.1.8 Construction Change Directive - A written order prepared by the Architect, issued by the Owner to the Contractor, and signed by the Owner and the Architect

authorizing the Contractor to proceed with a change in the Work. Construction Change Directives shall be issued on AIA Document G714 or any other form issued by or acceptable to the Owner. A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith and shall be considered a Change Order.

1.1.9 Construction Period - The period of the Contract Time which commences upon the issuance of the initial Notice to Proceed with Construction and concludes on the Final Completion Date.

1.1.10 Contract - As defined in the Agreement.

1.1.11 Contract Documents - As defined in the Agreement.

1.1.12 Contract Sum - As defined in the Agreement, subject to amendment in accordance with the provisions of the Contract.

1.1.13 Contract Time - As defined in the Agreement, subject to amendment in accordance with the provisions of the Contract.

1.1.14 Contractor - The entity with which the Owner has executed the Agreement. Wherever the term "Contractor" appears in the Contract Documents, it means the Contractor and Subcontractors who are obligated to perform all, or a part of, the Work described by the Contract Documents.

1.1.15 Critical Path - The sequential Critical Path Activities shown on the Project Schedule from the date of commencement of the Work through Final Completion.

1.1.16 Critical Path Activity - Any activity identified on the Project Schedule which, if delayed or prolonged, would cause the Construction Period to extend beyond the Contract Time.

1.1.17 Day - As used in the Contract Documents, the term shall mean calendar day. The terms "working day" and "business day" shall mean any calendar day except Saturdays, Sundays, and legal holidays at the place where the Project is located.

1.1.18 Delay Event - As defined in Subsection 9.4.1 of these General Conditions.

1.1.19 Drawings - The graphic and pictorial depictions of the Work prepared by the Architect, wherever located and whenever issued, showing the design, location, scope and dimensions of the Work, or parts thereof, generally including plans, elevations, sections, details, schedules and diagrams and any narrative notes thereon.

1.1.20 Excusable Delay - Any act, omission, event or condition which delays performance of the Work, for which the Contractor is entitled, under applicable provisions of the Contract Documents, to an extension of the Contract Time.

1.1.21 Final Completion - As defined in Subsection 10.8.5 of these General Conditions.

1.1.22 Final Completion Date - The date set forth in the Agreement on or prior to which Final Completion is required to be achieved.

1.1.23 Notice to Proceed (NTP) – A written communication issued by the Owner to the Contractor authorizing it to proceed with a specified portion of the Work.

1.1.24 Owner's Project Manager (OPM) - A project manager retained by the Owner to represent it in connection with the Project. The OPM is designated in the Agreement.

1.1.25 Product Data - Illustrations, standard schedules, performance charts, instructions, brochures, diagrams and any other information furnished by the Contractor to illustrate a material, product, assembly, or system for a portion of the Work. Product data are not Contract Documents.

1.1.26 Project Schedule - As defined in Section 9.2 of these General Conditions.

1.1.27 "Provide" or "Provided" - where used in the Contract Documents, such words shall be construed to mean "furnish(ed)" and "install(ed)" and/or "connect(ed)", unless specifically stated otherwise.

1.1.28 Request for Information (RFI) - A written and logged request issued by the Contractor, or any Subcontractor through the Contractor, to the Architect, with a copy sent to the OPM, requesting information about some aspect of the Contract Documents.

1.1.29 Samples - Physical examples that illustrate materials, products, equipment or workmanship and which, when approved in accordance with the Contract Documents, establish standards by which the Work will be inspected and judged. Samples are not Contract Documents.

1.1.30 Shop Drawings - All drawings, prints, diagrams, illustrations, brochures, schedules and other data prepared by the Contractor, a Subcontractor, or a Supplier to illustrate how specific portions of the Work shall be fabricated and/or installed. Shop Drawings are not Contract Documents.

1.1.31 "Shown" or "shown on Drawings" - Where used in the Contract Documents, such words shall be construed to mean "noted", "indicated", "scheduled", "detailed", or any other diagrammatic or written reference made in any of the Contract Documents.

1.1.32 Site - The area or areas indicated within the contract limit lines on the Drawings or otherwise defined in the Contract Documents, together with such additional areas or locations adjacent thereto in which construction operations or Work required under the Contract may be performed.

1.1.33 Specifications - Written narrative descriptions, prepared by the Architect, of requirements for materials, equipment, systems, standards and workmanship for the Work, and requirements for the performance of construction services.

1.1.34 State University – the State University campus on which the Project is located.

1.1.35 Subcontractor - An entity having a contract with the Contractor or with any other Subcontractor, regardless of tier, for the performance of a part of the Work required under the Contract Documents, including filed sub-bids.

1.1.36 Substantial Completion - As defined in Subsection 9.1.3 of these General Conditions.

1.1.37 Substantial Completion Date - The date set forth in the Agreement on or prior to which Substantial Completion is required to be achieved.

1.1.38 Supplier - Any entity having a contract with the Contractor, any Subcontractor or other supplier regardless of tier, who supplies materials or equipment for the Work, including that fabricated to a special design, but who does not perform labor at the Site.

1.1.39 Work – As defined in the Agreement.

1.2 INTERPRETATION OF CONTRACT DOCUMENTS

1.2.1 This Contract is subject to all applicable laws, regulations, codes, ordinances, rules, and orders of the United States of America, the Commonwealth of Massachusetts, and other governmental or public agencies and authorities with jurisdiction over the Project, and to all contracts and other agreements between the Owner and any such governmental or public agencies and authorities, referred to or incorporated in the Contract Documents (the "Applicable Laws").

1.2.2 The Contractor shall inform itself of all Applicable Laws in any manner affecting the Work, or the materials used or employed in the Work, or in any way affecting the conduct of the Work, and of all orders and decrees of bodies or tribunals having any jurisdiction or authority over the Work. The Contractor shall comply, and shall cause all persons and Subcontractors employed in the performance of the Work to comply, with all Applicable Laws.

1.2.3 Where any requirements contained in the Contract Documents do not conform to or are inconsistent with such Applicable Laws to which the Contract is subject or by which it is governed, such Applicable Laws shall have precedence over any matters set forth herein and the Contractor agrees to comply fully therewith. The Owner makes no representation as to and assigns no responsibility for the correctness or completeness of such statutory matters referred to or set forth in the Contract Documents.

1.2.4 The Contractor represents that it has examined and understands all of the Contract Documents and has visited the Site, examined and familiarized itself with the local conditions under which the Work is to be performed, including any work in progress under previously awarded contracts, verified to its satisfaction the nature and quantity of the Work involved, and correlated its observations with the requirements of the Contract Documents, and, by execution of the Agreement, the Contractor acknowledges its satisfaction with the same.

1.2.5 The intent of the Contract Documents is to describe the Work that, once constructed by the Contractor, will result in a functionally complete facility. It is intended that the Contractor shall furnish all Work necessary for the proper execution and completion of the Project in accordance therewith, including all Work incidental to or reasonably inferable from the Contract Documents as being necessary to produce the intended results, unless it is specifically indicated in the Contract Documents that such work is to be performed by others, and to complete the Project in a satisfactory manner, ready for use, occupancy, and operation by the Owner. The Contractor recognizes, and agrees to perform the Work consistent with the extra degree of care and skill required in an occupied academic campus setting with respect to safety, protection of pedestrians, cleanliness of the Site, health and the protection of existing utilities, adjacent streets and property. In agreeing to the Contract Time and the Contract Sum, the Contractor has considered and included those circumstances.

1.2.6 Unless the Contract Documents specifically provide otherwise or the context clearly requires a different meaning, the terms "directed," "required," "permitted," "ordered," "designated," "prescribed," and words of like import shall imply the direction, requirement, permission, order, designation, or prescription of the OPM or the Architect, subject in each case to the final determination of the Owner; and "approved," "acceptable," "satisfactory," and words of like import shall mean approved by, or acceptable or satisfactory to the OPM or the Architect, subject in each case to the final determination of the Owner; and "necessary," "reasonable," "proper," "correct," and words of like import shall mean necessary, reasonable, proper or correct in the judgment of the OPM or the Architect, subject in each case to the final determination of the Owner.

1.2.7 In case of discrepancies or conflicts among the Contract Documents or within any of the Contract Documents, the Contract Documents shall be interpreted on the basis of the following priorities:

(a) First, written amendments, including Change Orders, to the Agreement – those of a later date shall take precedence over those of an earlier date;

(b) Second, the Agreement Between Owner and Contractor;

(c) Third, Supplementary General Conditions, if any;

(d) Fourth, General Conditions;

(e) Fifth, Specifications; and

(f) Sixth, Drawings.

Among Drawings, large scale details shall control over small scale details, and indicated dimensions shall control over Drawings not dimensioned. In the event of a conflict or ambiguity within or between the Specifications or Drawings as to the quantity or quality of work or materials, the higher quality or greater quantity shall be furnished unless otherwise directed in writing by the Owner or the Architect.

1.2.8 Any information contained in the Specifications that has been omitted from the Drawings or vice versa shall be construed as though contained in both. In the event of any duplication, conflict, inconsistency, error, omission, or discrepancy among or within the Drawings and the Specifications (or among or within other portions of the Contract Documents so far as the same pertain to the Drawings or the Specifications), the matter shall promptly be brought to the attention of the Architect for instructions. If, having identified any duplication, conflict, inconsistency or discrepancy, the Contractor proceeds with the Work without receiving instructions from the Architect, the Contractor does so at its own risk and shall be responsible for performing any corrective Work at its own cost and without entitlement to any adjustment in the Contract Sum or the Contract Time.

1.2.9 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 Contract Documents, except where a contrary result is explicitly indicated by the Contract Documents. A typical or representative detail indicated on the Drawings shall constitute the standard for workmanship and material throughout the corresponding parts of the Work. Where necessary and where reasonably inferable from the Contract Documents, the Contractor shall adapt such representative detail for application to such corresponding parts of the Work. The details of such adaptation shall be subject to prior approval by the Architect. Repetitive features shown in outline on the Drawings shall be in exact accordance with corresponding features completely shown.

1.2.10 Where laws, regulations, codes, standards, requirements or publications of public or private bodies are referred to in the Contract Documents, references shall be understood to be to the latest revision in effect on the date of execution of the Contract Documents, except where otherwise indicated. The Contractor warrants that all Work performed hereunder shall meet the requirements of all such laws, regulations, codes, standards, requirements and publications which are applicable to the Project. Words and abbreviations which have well-known technical or trade meanings are used in the Contract Documents in accordance with such recognized meanings.

1.2.11 The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways:

(a) a duly-executed amendment to the Contract;

(b) a Change Order (pursuant to Section 13.1); or

(c) a Construction Change Directive (pursuant to Section 13.2).

The Contract Sum and the Contract Time may only be changed by a Change Order or a written amendment. In addition, the requirements of the Contract Documents may be clarified or supplemented, and minor variations and deviations in the Work may be authorized, by the Architect's Supplemental Instructions pursuant to Section 13.6 or by the Architect's approval of Submittals pursuant to Section 3.8.

1.2.12 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 or subcontractor. A section or division of the Specifications may cover the Work of more than one Subcontractor and the Work of one Subcontractor may be covered by more than one section or division of the Specifications. The Contractor and all Subcontractors shall refer to all of the Drawings, and to all of the Sections of the Specifications, and shall perform all Work reasonably inferable therefrom as being necessary to produce the intended results. The Owner assumes no liability to the Contractor arising out of jurisdictional issues raised or claims advanced by trade organizations, Subcontractors or other interested parties based on the arrangement or manner of subdivision of the content of the Specifications and Drawings. In the event of any claim arising out of any duplication, conflict, inconsistency or discrepancy within the Contract Documents as to the allocation of the Work among and between the Subcontractors and the Contractor's own forces, the Contractor shall be solely responsible for resolving the claim and shall be responsible for ensuring that all of the Work is completed without additional cost to the Owner and without delay, regardless of where or how it is described in the Contract Documents.

1.2.13 If any term or provision of any of the Contract Documents, or the application thereof to any party or circumstance shall, to any extent, be determined to be invalid or unenforceable, the remaining provisions of the Contract Documents, or the application of such term or provision to parties or circumstances other than those as to which it is held invalid or unenforceable, shall not be affected thereby, and each term and provision of each of the Contract Documents shall be valid and shall be enforced to the fullest extent permitted by law.

1.2.14 The Contract Documents shall not be construed to create a contractual relationship of any kind between: (1) the Architect and the Contractor; (2) the Owner and any Subcontractor or Supplier; or (3) between any other persons or entities other than the Owner and the Contractor. The Contractor understands and agrees that the obligations of the OPM and the Architect are solely to the Owner and, by performing those obligations properly, the OPM or the Architect may increase the burdens and expenses of the Contractor, its Subcontractors, or sureties or any of them.

1.3 OWNERSHIP AND USE OF DOCUMENTS

1.3.1 All Contract Documents and other related materials and copies thereof prepared or furnished to the Contractor are the property of the Owner, subject to the rights of the Architect as provided in the Owner-Architect Agreement. With the exception of one contract set for the Contractor, such documents shall be returned (or suitably accounted for) to the Owner, or if requested by the Owner, lawfully disposed of by the Contractor at the completion of the Work, as a condition precedent to final payment. Submission or distribution to meet official regulatory requirements or for other purposes in connection with the Project shall not be construed as publication in derogation of the Architect's common law copyright or other reserved rights.

1.4 OTHER REPRESENTATIONS

1.4.1 The Contractor shall perform the Work strictly in accordance with the Contract Documents. The Contractor accepts the relationship of trust and confidence established between it and the Owner established by the Agreement and other Contract Documents. The Contractor covenants with the Owner to furnish its best skill and judgment and to cooperate with the Owner, the Owner's Project Manager, the Architect and any other consultants employed by the Owner in furthering the interests of the Owner. The Contractor agrees to furnish efficient business administration, coordination, and superintendence and to furnish at all times an adequate supply of workers and materials, and to perform the Work in the best way and in the most expeditious and economical manner consistent with the interests of the Owner and to make every effort to achieve time savings and construction efficiencies with respect to the Work.

ARTICLE 2 ADMINISTRATION OF THE CONTRACT

2.1 OWNER'S PROJECT MANAGER

2.1.1 The OPM, if one has been retained by the Owner, and the Architect will assist the Owner in the administration of the Contract as provided in the Contract Documents. The OPM and the Architect may act directly or through their properly authorized agents, such agents acting within the scope of the particular duties entrusted to them. The Architect and the OPM will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents or as may be specified in writing by the Owner.

2.1.2 The Architect and the OPM will be representatives of the Owner during construction of the Work and until final payment is due and will advise and consult with the Owner as to the performance and progress of the Work. The Owner may communicate with the Contractor directly or through the OPM or the Architect. The Owner will endeavor to furnish to the Architect copies of any communications from the Owner to the Contractor, directly or through the OPM.

2.2 ARCHITECT'S SITE VISITS

2.2.1 The Architect will visit the Site at intervals appropriate to the stage of construction as may be required to familiarize itself generally with the progress and quality of the

Work and to determine in general whether 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. On the basis of its on-site observations as a design professional, it will keep the OPM and the Owner informed of the progress and quality of the Work.

2.2.2 Neither the Owner, the OPM, nor the Architect will have control, or charge of, or be responsible for, construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, and nor will any of them be responsible for the acts or omissions of the Contractor, Subcontractors or any other persons or entities performing any of the Work, or for the failure of any of them to carry out the Work in accordance with the Contract Documents.

2.2.3 All portions of the Work shall be subject to inspection and testing by the Architect and the OPM. The Architect will have authority to reject Work which does not conform to the Contract Documents. The Contractor shall, at its sole cost and expense, furnish the Architect with such information and assistance (including, without limitation, labor, tools, equipment and transportation) as is required for the Architect to make complete and detailed inspections or tests. Whenever the Architect considers it necessary or advisable for the implementation of the intent of the Contract Documents, the Architect will have authority to require special inspection or testing of portions of the Work in accordance with Article 8 hereof whether or not such Work be then fabricated, installed or completed. However, neither the Architect's authority to act hereunder, nor any decision made by the Architect 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 or entity performing any of the Work.

2.3 ARCHITECT'S SUPPLEMENTAL INSTRUCTIONS

2.3.1 The Architect will render, in writing, Architect's Supplemental Instructions and other interpretations necessary for the proper execution or progress of the Work, with reasonable promptness. Either party to the Contract may request such interpretations from the Architect by giving written notice of such request to the Architect with a copy thereof given to the other party, or the Architect may initiate such Architect's Supplemental Instructions or other interpretations upon notice to the OPM. The Architect will, as it judges necessary or desirable, issue as a part of such Architect's Supplemental Instructions additional drawings, specifications, or instructions indicating in greater detail the construction or design of the various parts of the Work reasonably inferable from the Contract Documents, and, provided such Architect's Supplemental Instructions are reasonably consistent with the previously existing Contract Documents, the Work shall be executed in accordance with such Architect's Supplemental Instructions without increase in the Contract Sum or extension of the Contract Time. Such change shall be effected by written order issued by the Architect and delivered to the Contractor. If the Architect determines that implementation of the requested changes would result in a material change to the Contract that may cause an adjustment in the Contract Time or Contract Sum, the Architect may make a recommendation to the Owner, which may authorize further investigation of such change. Upon such authorization, and based upon any information furnished by the OPM,

the Architect shall review and advise the Owner and the OPM concerning the additional cost and time that might result from such change. With the Owner's approval, the Architect shall request the Contractor to incorporate those estimates into a Change Order or other appropriate documentation for the Owner's execution or negotiation with the Contractor.

2.4 ARCHITECT'S INTERPRETATIONS

2.4.1 Interpretations and decisions of the Architect shall be consistent with the intent of, and reasonably inferable from, the Contract Documents and shall be in written or graphic form. In the capacity of interpreter, the Architect shall endeavor to secure faithful performance by both the Owner and the Contractor, shall not show partiality to either, and shall not be liable for the result of any interpretation or decision rendered in good faith in such capacity.

2.5 SUBMITTALS

2.5.1 The Architect will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples but only for the purpose of checking for conformance with the design concept and with the information in the Contract Documents. The Architect shall communicate all such approvals or other actions to the Contractor with copy to the OPM. Review of such submittals is not conducted for the purpose of substantiating instructions for installation or performance of equipment or systems designed by the Contractor, all of which remain the responsibility of the Contractor. The Architect's review shall not constitute approval of safety precautions or of construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not constitute approval of an assembly of which the item is a component. The Architect shall not be required to review partial submittals nor submittals for which necessary correlated submissions have not been received.

2.6 REPLACEMENT ARCHITECT

2.6.1 In case of the termination of the employment of the Architect, the Owner shall appoint an architect whose status under the Contract Documents shall be that of the former architect**.** The Contractor shall cooperate with the replacement architect in connection with the completion of the Work. Replacement of the Architect shall not entitle the Contractor to any adjustment in the Contract Sum or the Contract Time.

ARTICLE 3 CONTRACTOR'S RESPONSIBILITIES

3.1 DUTY TO REVIEW CONTRACT DOCUMENTS AND SITE CONDITIONS

3.1.1 Before starting the Work, and continuously during the progress thereof, the Contractor shall carefully examine the Site, take field measurements, and carefully study and compare the Contract Documents with each other and with conditions at the Site, including work completed or in progress under other contracts, and with such other information, documents, plans and criteria as may be available in connection with the Project and shall immediately communicate to the Architect and the Owner, in writing, all errors, inconsistencies and omissions it discovers. If the Contractor proceeds with the Work without such notice to the Architect and the Owner, having discovered such errors, inconsistencies or omissions, or if by reasonable study of the Contract Documents and other conditions the Contractor could have discovered the same, the Contractor shall perform all necessary corrective work and bear all costs and expenses arising therefrom and shall have no claim for increases in the Contract Sum or extensions of the Contract Time for extra work made necessary thereby.

3.1.2 The Contractor shall give the Architect timely written notice of any additional Drawings, Specifications, clarifications or instructions required to define the Work in greater detail or otherwise required to permit the proper progress of the Work. 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. If the Contractor proceeds with such Work without obtaining further drawings or instruction, the Contractor shall correct, at its own expense, Work incorrectly done.

3.1.3 Without limitation, the Contractor shall review the Contract Documents for clarity, consistency, constructability, maintainability, operability and coordination among trades, and time requirements for procurement, installation and construction, and sequence of construction, including recommendations designed to minimize adverse effects of labor or material shortages.

3.1.4 If the Contractor recognizes or discovers that any portion of the Drawings and Specifications is at variance with Applicable Laws, the Contractor shall immediately notify the Owner and the Architect in writing and shall not proceed with the such Work without specific written direction by the Owner. If the Contractor performs any Work knowing or having reason to know that said Work is contrary to Applicable Laws and without so notifying the Owner and the Architect, the Contractor shall assume full responsibility therefor and shall bear all costs of correction thereof, and any other costs including any loss, cost or damage sustained by the Owner attributable thereto

3.1.5 The Contractor shall at all times provide the Architect, its representatives and consultants, the OPM, and the Owner, and its agents, employees, representatives, other contractors, and consultants with access to the Site and the Work wherever it is in preparation and progress. The Contractor shall provide safe and proper facilities for such access and for observation, testing, and inspection of the Work.

3.2 SUPERVISION AND CONSTRUCTION PROCEDURES

3.2.1 The Contractor shall supervise, coordinate, and direct the Work competently and efficiently, using its best skill and attention. The Contractor shall be solely responsible for all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract. The Contractor shall be responsible to see that the finished Work complies accurately with the Contract Documents. The Contractor shall not be relieved from its obligations to perform the Work in accordance with the Contract Documents either by the activities or duties of the Architect or the OPM in their administration of the Contract, or by inspections, tests or approvals required or performed under Article 8 hereof by persons other than the Contractor.

3.2.2 The Contractor's Project Team shall consist of, as a minimum, a qualified Project Executive, Project Manager, Project Superintendent, and other necessary assistants and technical and administrative personnel. The Project Superintendent shall be licensed by the Commonwealth of Massachusetts. No change shall be made in the composition of the Project Team without the Owner's prior written approval. The removal or replacement without the Owner's consent of any of the identified members of the Contractor's Project Team shall constitute a material breach of the Contract. The Owner may require replacement of any member of the Contractor 's Project Team upon notice to the Contractor with or without cause.

3.2.3 Both the Project Manager and the Project Superintendent shall have full authority to act on behalf of the Contractor. The Project Manager or Project Superintendent and necessary assistants shall be in attendance at the Site at all times during the progress of the Work until Final Completion. The Project Manager and the Project Superintendent shall represent the Contractor and notices or other communications given to the Project Manager or the Project Superintendent shall be as binding as if given to the Contractor directly.

3.2.4 During the course of construction, the Architect or the OPM shall schedule, convene and conduct Project meetings for the purpose of conducting an orderly review of the progress of the Work, as often as the Architect or the Owner deems necessary, but at least once each week, in accordance with a schedule established by the Architect. Such meetings shall be held at the Site and shall be attended by representatives of the Owner, the Contractor and the Architect. Representatives of Subcontractors shall attend such meetings as necessary when Subcontractors are performing significant work on the Project or when a Subcontractor's presence is requested by the Owner or the Architect. The Contractor's representative(s) at each meeting shall be the Project Manager and the Project Superintendent. The Architect shall take minutes of each meeting in form, substance, and detail acceptable to the Owner.

3.2.5 The Contractor shall furnish sufficient forces, plant, and equipment as may be necessary to insure the progress of the Work in accordance with the Project Schedule (as defined below). If the Contractor falls behind the Project Schedule, the Contractor shall promptly submit a proposal demonstrating the manner in which the rate of progress may be increased and shall take such steps as may be necessary to meet the Project Schedule at no additional cost to the

Owner. It shall be the responsibility of the Contractor to maintain its schedule so as not to delay the progress of the Work or the scheduled work of other contractors.

3.2.6 The Contractor shall be solely responsible for properly laying out the Work, and for all lines, elevations and measurements for all of the Work. It shall verify the figures shown on the Drawings before laying out the Work and will be responsible for any errors or inaccuracies resulting from its failure to do so.

3.2.7 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 such 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 OPM and 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 OPM and 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 to proceed at the Owner's risk.

3.2.8 If any portion of the Work is suspended by the Contractor for any reason at any time, prior notice shall be given to the OPM of such suspension and of the resumption of such Work.

3.2.9 If the Contractor observes or determines that any Work previously performed under the Contract or any work performed by the Owner or by a separate contractor is not in accordance with the Contract Documents or is otherwise unsatisfactory, the Contractor shall promptly notify the OPM and the Architect in writing describing the situation in full detail.

3.3 LABOR AND MATERIALS

3.3.1 The Contractor shall provide competent, suitably qualified personnel to perform all Work as required by the Contract Documents. Unless otherwise specified in the Contract Documents, the Contractor shall furnish at its expense and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other utilities, services, facilities and incidentals necessary for the proper furnishing, performance, testing and completion of the Work.

3.3.2 All materials and equipment shall be of first quality and new and of recent manufacture, except as otherwise expressly provided in the Contract Documents. If

required by the Architect, or the OPM, the Contractor shall furnish written information or other satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment, and stating the original sources of supply of materials and products manufactured or produced at locations other than the Site of the Work. In order to permit time for required inspections, testing and approvals, such information shall be furnished at least thirty days (or as otherwise directed by the Architect or the OPM) in advance of the incorporation of any such materials or products in the Work. The Contractor shall make no claim for extra cost or extension of the Contract Time arising directly or indirectly out of its failure to timely select materials or products to permit a reasonable time for completion of inspections, testing or approvals, or because of the Contractor's purchase of materials or products in advance of approval.

3.3.3 Reference in the Contract Documents to any product, material, equipment, method or process by proprietary name, manufacturer, vendor, supplier, make or catalog number shall be interpreted as establishing a standard of quality.

3.3.4 Except in the case of minor changes in the Work authorized by the Architect in accordance with the provisions of the Contract Documents, the Contractor may make substitutions only in conformance with the provisions of Section 00.73.73 of the Specifications (M.G.L. c. 30, § 39M(b)).

3.3.5 The Contractor's attention is directed to M.G.L. c. 30, § 39I which provides criminal penalties for unauthorized deviations from the Drawings and Specifications: "Contractor shall perform all Work required by the Contract in conformity with the plans and specifications contained therein or made a part thereof. No willful and substantial deviation from said plans and specifications shall be made unless authorized in writing by the Owner or by the Architect who is duly authorized by the Owner to approve such deviations. In order to avoid delays in the prosecution of the Work required by the Contract such deviation from the plans or specifications may be authorized by a written order of the Owner or Architect so authorized to approve such deviation. Within thirty days thereafter, such written order shall be confirmed by a certificate of the Owner stating: (1) If such deviation involves any substitution or elimination of materials, fixtures or equipment, the reasons why such materials, fixtures or equipment were included in the first instance and the reasons for substitution or elimination, and, if the deviation is of any other nature, the reasons for such deviation, giving justification therefor; (2) that the specified deviation does not materially injure the Project as a whole; (3) that either the work substituted for the Work specified is of the same cost and quality, or that an equitable adjustment has been agreed upon between the Owner and the Contractor and the amount in dollars of said adjustment; and (4) that the deviation is in the best interest of the Owner. Such certificate shall be signed under the penalties of perjury and shall be a permanent part of the file record of the Work contracted for. Whoever violates any provision of this section willfully and with intent to defraud shall be punished by a fine of not more than five thousand dollars or by imprisonment for not more than six months, or both."

3.3.6 The Owner will consider formal written requests made through the Architect for the substitution of products in place of those specified only under the conditions set

forth in the Contract Documents, unless otherwise expressly agreed by Owner in its sole discretion. By making requests for substitutions, the Contractor:

(a) represents that it has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified, and expressly warrants that such proposed substitute product will perform adequately the functions and achieve the results called for by the Contract Documents;

(b) represents that it will provide the same warranties and guarantees for the substitute product that it would for that specified;

(c) certifies that the cost data presented is complete and includes all related costs under the Contract but excluding costs under other contracts (but separately identifying such costs, if any, of other contracts), and excluding the Architect's redesign costs, if any, and waives all claims for additional costs related to the substitution which subsequently become apparent;

(d) certifies that the proposed substitution will not result in any increase in the Contract Sum and represents and agrees that any cost savings will be passed through to the Owner in the form of a credit against the Contract Sum; and

(e) will coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.

Notwithstanding approval or acceptance of such substitution by the Owner, any additional cost, or any loss or damage to the Owner arising from the substitution of any material or any method for those originally specified, shall be borne by the Contractor, including, without limitation, the costs of modifying Contract Documents and additional fees of the Architect, the Owner's consultants or engineers, unless such substitution was made at the written request or order of the Owner.

3.3.7 The Contractor shall at all times enforce strict discipline and good order among and between its employees and the employees of its Subcontractors and shall not employ or permit to be employed on the Work any person who is not properly skilled in the work to be performed by it or who is otherwise unfit. Whenever the Owner shall notify the Contractor in writing that any person employed on the Work is, in the opinion of the Owner or the Architect, incompetent, disorderly or otherwise unsatisfactory, such person shall be discharged immediately and shall not again be employed on the Work except with the prior written consent of the Owner.

3.3.8 The Contractor shall furnish labor that can and will work in harmony with all other elements of labor employed or to be employed on the Project. The costs of maintaining labor harmony, including without limitation, the cost of security, public safety measures and necessary traffic management shall be paid by the Contractor and the Contractor shall have no claim for any costs of maintaining labor harmony.

3.3.9 Any employee found on site subject to M.G.L. c. 30, § 39S without documentation of successful completion of a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration shall be subject to immediate removal and the Contractor shall immediately remove any such employee.

3.3.10 The Contractor will not be entitled to additional compensation for Work performed outside of regular working hours, except as otherwise expressly authorized in writing by the Owner prior to the performance of such overtime or premium shift work. Additional compensation for such authorized overtime or premium shift work shall be limited to the direct cost of the premium portion of such authorized overtime. The Contractor shall comply with M.G.L. c. 149, §§ 30, 34 and 34A which provide that no laborer, workman, mechanic, foreman or inspector working within the Commonwealth in the employ of the Contractor, Subcontractor or other person doing or contracting to do the whole or part of the Work 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.

3.3.11 All materials and equipment shall be delivered, handled, stored, installed and protected to prevent damage in accordance with the best current practice in the industry, in accordance with the manufacturers' specifications and recommendations, and in accordance with Contract Document requirements. The Contractor shall deliver materials and equipment in ample time to facilitate inspection and testing prior to installation. The term "delivery" in reference to any item specified or indicated, means the unloading and storing with proper protection at the Site. Damaged materials or equipment may be rejected and the Contractor shall provide conforming materials or equipment at no additional cost.

3.3.12 The Contractor shall be responsible for determining that all materials furnished for the Work meet all the requirements of the Contract Documents. The OPM or the Architect may require the Contractor to produce reasonable evidence that a material meets such requirements, such as certified 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.

3.3.13 All manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned, conditioned and commissioned in accordance with the manufacturer's or supplier's written or printed directions and instructions unless otherwise indicated in the Contract Documents.

3.3.14 The layout of mechanical and electrical systems, equipment, fixtures, piping, duct work, conduit, specialty items, and accessories indicated on the Contract Documents is diagrammatic, and all variations in alignment, elevations, and detail required to avoid interferences and satisfy architectural, engineering and structural limitations are not necessarily shown. Prior to the commencement of the portion of the Work relating to the mechanical, electrical, plumbing, fire protection or any similar systems, the Contractor shall furnish the Owner with a coordination drawing, illustrating all systems, equipment, fixtures, conduit, pipes, valves

and all related installations in CADD format. Actual layout of such Work shall be carried out without affecting the architectural, engineering and structural integrity and limitations of the Work and shall be performed in such sequence and manner as to avoid conflicts, provide clear access to all control points, including valves, strainers, control devices, and specialty items of every nature related to such systems and equipment, obtain maximum headroom, provide adequate clearances as required for operation and maintenance, and provide an orderly appearance when exposed. Exact locations of fixtures and outlets shall be obtained from the Architect as provided in the Contract Documents before the Work is roughed in. Work incorrectly installed without such information from the Architect shall be relocated at the Contractor's expense.

3.4 PHASES OF THE WORK—CONSTRUCTION PHASE

3.4.1 The construction phase shall commence upon the issuance by the Owner of a written notice to proceed with the Work.

3.4.2 The Contractor shall be responsible for ensuring that adequate quality control programs are developed, implemented and enforced by the Contractor's staff and all Subcontractors, including assigning an experienced quality manager, who may be the Project Superintendent employed by the Contractor, who shall be stationed at the Project Site and who shall be responsible for reviewing and coordinating the quality control activities of all Subcontractors and monitoring the implementation and enforcement thereof in connection with all aspects of the Work.

3.4.3 The Contractor shall be responsible for overall management, supervision, and coordination of all Subcontracts and of labor relations in connection with the Project 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 and in accordance with the requirements of the Contract Documents. The Contractor shall identify and resolve jurisdictional issues and disputes prior to bidding and award of the applicable Subcontracts, so as to cause no delay in the Work.

3.4.3.1 In consultation with the OPM and the Architect, the Contractor shall develop and implement procedures for orderly completion of Punch-List items, check out of utilities, operational systems and equipment and initial start-up and testing. The Contractor shall prepare and deliver to the Architect warranties, as-built drawings, maintenance manuals and the like, and generally administer closeout of the Work. In connection with the closeout of the Work, the Contractor shall take steps to ensure the performance of all warranty and guarantee obligations, resolution of all claims and other post construction requirements and will assist in building commissioning in accordance with the terms of the Contract Documents.

3.5 PERMITS AND FEES; COMPLIANCE WITH LAW

3.5.1 The Contractor, at its cost, shall secure and pay for all demolition permits, construction or building permits, utility inspection and connection fees, certificates of occupancy and all other permits and approvals and governmental fees or charges (including, without limitation, microfilming charges), licenses, inspections and certificates of inspection necessary for the proper execution, completion and use and occupancy of the Work, including, without limiting the generality of the foregoing, permits for temporary occupancy or obstruction of or projection into, over or under public streets and sidewalks and other public ways, curb-cut permits, and notifications to and permits or approvals from the Massachusetts Department of Environmental Protection or others necessary in connection with the performance of the Work (the "Permits and Approvals"). The Contractor shall promptly deliver to the OPM and the Architect copies of all such Permits and Approvals (and supporting applications), licenses and certificates, and satisfactory evidence that disposal of all waste material in connection with the Project is done in full compliance with Applicable Laws.

3.5.2 The Contractor shall arrange for and provide at its expense all local policemen required to be present at or adjacent to the Site for traffic control purposes.

3.5.3 The Contractor shall give all notices required by and shall otherwise comply with all Applicable Laws bearing on the performance of the Work including, without limitation, applicable provisions of the Massachusetts State Building Code, applicable environmental laws and ordinances and regulations concerning noise pollution and dust control.

3.5.4 The Contractor shall obtain at its expense and deliver to the Owner, as the case may be, an unconditional permanent and full Certificate of Occupancy. Receipt of such Certificate by the Owner, as applicable, shall be a condition precedent to Final Completion of the Work, unless such Certificate is not issued solely for reasons as to which the Contractor has no responsibility or over which it has no control, in which case the Contractor shall continue to use its best efforts to obtain said Certificate as expeditiously as possible and at no additional cost to the Owner.

3.6 UTILITIES

3.6.1 The Contractor shall be solely responsible for verifying the precise locations of utilities on the Site or serving the Project. The Drawings and Specifications endeavor to indicate all pipes, conduits, lines or other structures or equipment of public and private utility companies ("Utility Equipment") at and adjacent to the Site of which the Owner is aware. However, the Owner makes no representation or warranty that the utility equipment shown on the Drawings or referred to in the Specifications is the only utility equipment that may be encountered. Prior to commencing the Work, the Contractor shall visit the Site and to the extent possible shall confirm the existence and location of all utility equipment and shall, during the course of the Work, make diligent and continuous efforts to confirm the locations of all utility equipment at and adjacent to the Site. The Contractor shall promptly notify the Owner and Architect in writing, prior to commencing affected portions of the Work, of any Utility Equipment that it discovers and that has not been identified on the Drawings. If and as directed by the Owner, the Contractor shall make necessary arrangements with utility companies for the protection, alteration and relocation

of utility equipment necessary in connection with performance of the Work, and shall notify all municipal departments and utility companies concerned of the time and location of any work which may affect them. To the extent not covered by insurance, the Contractor shall be responsible for all costs and all claims, damages and liabilities arising directly or indirectly from any damage to Utility Equipment or any intentional or unintentional interruption of service occurring in connection with the performance of the Work and caused by the Contractor or any Subcontractor or other operations of the Contractor.

3.6.2 The Contractor shall perform the Work so as not to interfere with utility companies or municipal departments that may enter on the Site to make changes in Utility Equipment or to place new utility equipment. Except as otherwise set forth in Section 9.4 hereof, the Contractor shall have no claim for or on account of any delay which may be due to or result from such work of utility companies or municipal departments.

3.7 DOCUMENTS AND SAMPLES AT THE SITE

3.7.1 The Contractor shall maintain at the Site in a safe and secure place one record copy of: (i) all Contract Documents and other Project-related documents marked currently to record all changes made during construction; (ii) approved Shop Drawings, Product Data and Samples; (iii) copies of all building, electrical, plumbing, public safety and other codes and regulations applicable to the Work; (iv) certified payroll reports; and (v) all permits, licenses, approvals, inspection reports and certificates obtained as required by Section 3.5. These shall be available to the Architect, the OPM, and the Owner for reference and shall be delivered to the OPM upon completion of the Work. The Contractor shall keep all such documents in good order and shall maintain current logs of all Project-related documents, which logs shall be in form and detail satisfactory to the Owner and the Architect.

3.7.2 The Contractor shall keep a separate and complete set of black-line prints of the Drawings and Specifications on which shall be noted neatly, accurately, completely, and promptly, as the Work progresses: (a) the progress of the Work installed by coloring in all pipe lines, ducts and apparatus as constructed or installed; and (b) all changes, deviations, revisions to the plumbing, electrical, HVAC and all other Work, wherever such Work was installed other than as shown on the Contract Documents. The Contractor shall be responsible for assuring that the progress of the Work and all changes, deviations, and revisions are delineated by the Subcontractors responsible for performing the specific Work. Failure to maintain such as-built Drawings and Specifications may result in withholding of payments to the Contractor. The Owner, the OPM, the Architect, and their respective agents, representatives, and other consultants, shall have access to all Project documents maintained by the Contractor at all times. The Contractor shall cooperate with and assist the Architect in connection with the Architect's periodic reviews of the as-built Drawings and other Project documents prepared and maintained by the Contractor.

3.7.3 Upon Substantial Completion of the Work, the Architect shall make a final review of the as-built Drawings prepared by the Contractor and if any omissions, incorrect information, or inconsistencies are found, the Drawings shall be revised by the Contractor until acceptable to the Architect. When the final as-built Drawings are complete to the satisfaction of

the Architect, the Contractor shall furnish to the Architect a complete set of as-built Drawings with each sheet being clearly marked "AS-BUILT DRAWING" and containing the date of the print and the Contractor's certification that the as-built Drawing accurately and completely depicts the Work as constructed. The Contractor shall deliver the as-built Drawings to the Architect in hand-marked and electronic form in the Architect's and the Owner's CADD format, containing a full set of CADD as-built Drawings for the Work.

3.7.4 Upon Substantial Completion of the Work, the Contractor shall prepare and deliver to the Architect four (4) copies of a full and complete operating and maintenance manual for the Project. In accordance with the Specifications, the manual shall contain full information for each item of mechanical, electrical or other operating equipment, copies of warranties therefore, schematic diagrams of control systems, circuit directories for each electric and communications panel board, and charts showing the tagging of all valves. The Contractor shall obtain and include in the manual reduced scale photocopies of the relevant, revised as-built Drawings referred to in Subsection 3.7.3. Each volume of the manual shall contain all information required by the Specifications and these General Conditions, shall be clearly indexed, and shall include a directory of all Subcontractors and maintenance contractors, indicating the area of responsibility of each, and the name, telephone number, and other pertinent contact information for the responsible member of each organization. Such manuals shall be delivered to the Owner prior to, and as a condition precedent to, final payment.

3.7.5 The Contractor shall arrange for instruction in the operation and maintenance of the fire protection, plumbing, heating, ventilating and air conditioning, electrical and mechanical (including, without limitation, elevators) systems for State University employees. It is the intent of this Subsection 3.7.5 to require the Contractor and the applicable Subcontractors to furnish as much detailed instruction as is required by the Contract Documents to educate State University facilities personnel in the proper use of the facilities equipment. Specifically, instruction and supervision for State University employees and representatives shall be provided during two seasonal conversions of the HVAC systems beyond the building start-up. This instruction shall be provided by the manufacturer's representative for each item of equipment at no additional cost to the Owner. In some cases, this may require several visits to the Project by those responsible for the instruction. The Contractor shall, with written consent of all instructors, videotape all such training sessions, and a copy of each videotape shall be delivered to the Owner, prior to, and as a condition precedent to, final payment.

3.8 SUBMITTALS

3.8.1 The Contractor shall prepare or review, approve and submit to the Architect, with a copy of the transmittal to the OPM, for review, sufficiently in advance 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 or other submittals required by the Contract Documents, all in accordance with the requirements set forth in the Specifications. Neither the Owner nor the Architect shall be responsible for Work performed in shop or field prior to approval of any applicable Shop Drawings, Product Data or Samples.

3.8.1.1 Within thirty (30) days of receiving a Notice to Proceed with construction from the Owner, the Contractor shall submit to the Architect and the OPM a detailed submittal schedule detailing the submittal and review process for all shop drawings, product data, samples, and other submittals. The submittal schedule shall incorporate appropriate time periods for the Architect's review of Shop Drawings and all other submittals required by the Contract Documents. The submittal schedule shall be coordinated with the Project Schedule and shall be in form, substance, and detail acceptable to the Owner and the Architect.

3.8.2 By preparing, approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor thereby represents that it has determined and verified all materials, design required in the implementation of the Work, dimensions, quantities, field measurements, details, relations to existing work, coordination with work to be installed later, coordination with information on previously accepted Shop Drawings, Product Data, Samples or similar submittals and compliance with all the requirements of the Contract Documents. The accuracy and completeness of all such information is the responsibility of the Contractor. Approval by the Contractor shall be clearly indicated on each submittal, in ink or by stamp, and signed or initialed and dated by the Contractor. Submittals that have not been reviewed and approved by the Contractor in accordance with the requirements stated in this Section 3.8 and the Specifications shall be returned to the Contractor with no action taken by the Architect. Such submissions shall be re-submitted to the Architect with the Contractor's review and approval provided as required. Language contained in the Contractor's approval of submittals shall not be interpreted to limit in any respect or otherwise affect the Contractor's responsibilities and liabilities hereunder.

3.8.3 The Architect shall review the Contractor's submittals in accordance with Section 2.5. If corrections are required, a full set of copies of duplicate parts or corrected submittals shall be submitted to the Architect for approval, and this procedure shall be followed until final approval of the submittal has been given by the Architect. All portions of the Work shall be performed strictly in accordance with the approved submittals.

3.8.4 If Shop Drawings submitted by the Contractor indicate a deviation from the Contract Documents, the Contractor shall specifically inform the Architect and the OPM, in writing, of such deviation at the time of submission. 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 or other submittals, unless the Contractor has specifically informed the Architect and the OPM 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. The Architect's approval of a specific item shall not constitute approval of an assembly of which the item is a component.

3.8.5 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or other submittals 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 revised submittal shall not constitute approval of any changes not requested by the Architect on the prior submittal.

3.8.6 No acceptance or approval of any Shop Drawing, Product Data or Sample, nor any indication or request marked by the Architect on any Shop Drawing shall constitute an authorization for any increase in the Contract Sum.

3.9 SITE ACCESS

3.9.1 The right of possession of the Site and the improvements made thereon by the Contractor shall remain at all times with the Owner. The Contractor's right to entry and use thereof arises solely from the permission granted by the Owner under the Contract Documents. The Contractor shall confine its apparatus and equipment, storage of materials, and all operations at the Site to areas permitted by law, ordinances, permits, the Contract Documents, and the directions of the OPM, and shall not unreasonably encumber the Site with any materials or equipment.

3.9.2 The Contractor shall not use, occupy or obstruct, nor permit any Subcontractor or any other person performing the Work to use, occupy or obstruct, any lands or areas outside of the legal limits of the Site, unless written permission in form and substance satisfactory to the Owner has been obtained by the Contractor at the Contractor's sole cost.

3.9.3 The Contractor may, subject to the Owner's prior written consent, install a construction sign as provided in the Specifications, but shall not permit the posting of any other sign, trademark, advertisement, or other identification symbol in or about the Site. The Owner shall have the right, without notice to the Contractor, to remove any sign, trademark, advertisement or other identification symbol installed in violation of this Subsection 3.9.3 at the Contractor's expense. The construction sign installed by the Contractor shall also identify the Subcontractors or, alternatively, the Contractor shall provide a single location, approved by the Owner in writing, for Subcontractor signage.

3.9.4 Any damage to the premises or equipment of the Owner caused by the Contractor or any Subcontractor shall be corrected by the Contractor as directed by the Owner and at the expense of the Contractor, subject to the Contractor's right to coverage under the Owner's builders risk insurance obtained with respect to the Project, but such right shall pertain only to the extent of proceeds actually received by the Owner, the Contractor being responsible for any deductible and for any of the Owner's losses not covered.

3.10 CUTTING AND PATCHING

3.10.1 The Contractor shall be responsible for all cutting and patching, as approved by the Architect, necessary for the completion of the Work in accordance with the Contract Documents.

3.10.2 The Contractor shall not damage or endanger any portion of the Work or the work of the Owner or any separate contractors by excavation, cutting, patching or otherwise altering any Work. The Contractor shall not unreasonably withhold from the Owner or any other contractor its consent to excavating, cutting, patching, or otherwise altering the Work.

3.11 WEATHER PROTECTION

3.11.1 The Contractor shall provide and coordinate temporary enclosures and heat, as may be more particularly set forth in the Contract Documents, to permit the entire Work to be carried on during the months of November through March in compliance with M.G.L. c. 149, § 44F. These specifications are not to be construed as requiring enclosures or heat for operations that are economically infeasible in the judgment of the Architect. Included in this category, without limitation, are such items as site work, excavation, steel erection, erection of certain exterior wall panels, roofing, and similar operations.

3.12 WASTE DISPOSAL AND CLEANING

3.12.1 All wastes, including any special or hazardous wastes, construction waste, demolition waste, and general rubbish, generated as a part of the Work, shall be properly classified by the Contractor and transported and disposed in accordance will all local, state, and federal laws and regulations that pertain to such materials. The Contractor shall retain the services of a qualified and properly licensed waste transporter. The Contractor shall make all arrangements and give and obtain all notices, communications, documentation, permits, certificates, and approvals necessary for disposal from the owner or officials in charge of such landfills, disposal or recycling facilities. The Contractor shall bear all fees and costs in connection with such classification, removal, transportation, and disposal. The Contractor shall not permit any storage of debris or waste of any name or nature on the premises.

3.12.2 Chemical waste shall be stored in corrosion resistant containers, removed from the premises, and disposed of in accordance with all applicable laws and any Contract Documents requirements. Disposal of chemical waste shall be performed in accordance with requirements of the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (DEP). The Contractor shall immediately notify the Owner, the Architect, and the appropriate governmental agency of any hazardous materials release large enough to require reporting under applicable laws and regulations. The Contractor shall be responsible for immediately cleaning up, in accordance with applicable law, any oil or hazardous materials releases resulting from its operations on the Project. Any costs incurred by the Contractor in cleaning up any such releases and any damages incurred by the Owner arising form such release shall be borne by the Contractor.

3.12.3 The Project and the Site shall be maintained in a neat and orderly condition and kept free from accumulation of waste materials and rubbish during the entire Construction Period. All crates, cartons and other flammable waste materials or trash shall be removed from the work areas at the end of each working day. If the Project and Site are not maintained properly, after 24 hours prior written notice to the Contractor, the Owner may have any accumulations of waste materials or trash removed and charge the cost to the Contractor. Elevator shafts, electrical closets, pipe and duct shafts, chases, furred spaces and similar spaces which are generally unfinished, shall be cleaned and left free from rubbish, loose plaster, mortar drippings, extraneous construction materials, dirt and dust.

3.12.4 At the completion of the Work, the Contractor shall remove all its tools, construction equipment, machinery and surplus materials, and shall leave the Site in a neat and clean condition satisfactory to the Owner. Immediately prior to the Architect's inspection for Substantial Completion of the entire Work, or any portion thereof, the Contractor shall, when directed to do so by the Owner, completely clean any and all portions of the Project to be inspected. Without limitation, concrete and ceramic surfaces shall be cleaned and washed; resilient coverings shall be cleaned, waxed and buffed; woodwork shall be dusted and cleaned; sash, fixtures, and equipment shall be thoroughly cleaned; stains, spots, dust, marks and smears shall be removed from all surfaces; hardware and all metal surfaces shall be cleaned and polished and glass and plastic surfaces shall be thoroughly cleaned by professional window cleaners. All damaged, broken and scratched surfaces shall be replaced by the Contractor at the Contractor's sole expense.

3.12.5 If the Owner elects to take occupancy of specific areas or portions of the Work prior to the completion and acceptance of the entire Work as provided in Article 15 hereof, the Contractor shall carry out final cleaning operations as herein specified in such specific areas or portions of the Work prior to occupancy thereof, as directed by the Owner. The Contractor shall remove or, when appropriate, relocate, all surplus materials, equipment, supplies, construction plant, and facilities as required in order to permit the occupancy and utilization of such specific areas or portions of the Work.

3.13 PROJECT COMMUNICATIONS

3.13.1 Copies of all communications from the Contractor to the Architect or the OPM shall be provided simultaneously to the other and, if required by the Contract Documents, also to the Owner.

3.13.2 The Contractor shall forward to the Architect any communications which the Contractor transmits to the Owner relating to any matter within the purview of the Architect pursuant to the provisions of the Contract Documents.

3.14 ROYALTIES AND INTELLECTUAL PROPERTY

3.14.1 The Contractor shall pay all royalties and license fees, shall defend all suits or claims for alleged infringement of any intellectual property rights, and shall indemnify and save the Owner, the OPM, the Architect, and the State University harmless from loss on account

thereof, except that the Contractor shall not be responsible for such loss when a particular design, process, or the product of a particular manufacturer or manufacturers is specified, unless the Contractor has reason to believe that the design, process, or product specified is an infringement of intellectual property rights, in which event the Contractor shall be responsible for such loss unless it promptly gives such information to the Owner.

3.15 FINANCIAL CONDITION

3.15.1 The Contractor warrants and represents that its financial condition is sound and that the Contractor is capable of performing the Work and obtaining any bonds now or hereafter required pursuant to the Contract Documents. Upon request by the Owner, the Contractor shall make available to the Owner, within fourteen (14) days, such audited and unaudited financial statements of the Contractor as the Owner may reasonably request or as may be required by Applicable Law. The Contractor shall promptly advise the Owner of any occurrence, event, fact, or other matter that has had, will have, or might reasonably be predicted to have a material adverse effect upon the financial condition of the Contractor.

3.16 PREVAILING WAGE; RECORDKEEPING

3.16.1 The Contractor shall comply with the Massachusetts Prevailing Wage Law, M.G.L. c. 149, § 26-27H. The Prevailing Wage Law requires that a true and accurate record be kept of all persons employed on the a project for which the prevailing wage rates have been provided. The Contractor and all Subcontractors shall keep these records and preserve them for a period of three years from the date of completion of the Contract. Such records shall be open to inspection by any authorized representative of the Owner at any reasonable time, and as often as may be necessary. The Contractor shall, and shall cause its Subcontractors to, submit weekly copies of their weekly payroll records to the Owner. In addition, the Contractor and each Subcontractor shall furnish to the Executive Department of Labor within fifteen days after completion of its portion of the Work a signed statement in the form required by the Owner.

3.16.2 The Contractor shall comply with, and shall cause its Subcontractors to comply with M.G.L. c. 149, § 148 which requires the weekly or biweekly payment of employees within six days of the end of the pay period during which wages were earned if employed for five or six days of a calendar week, and within other periods of time under certain circumstances as set forth therein.

3.17 EEO/AA AND M/WBE REQUIREMENTS

3.17.1 The Contractor shall comply at all times in all respects with all government laws, regulations and ordinances affecting or regulating employment of persons in connection with the Work, and with the equal employment opportunity and affirmative action requirements set forth in **Exhibit D** and **Exhibit E** to the Agreement.

3.17.2 The Contractor shall submit a construction employment plan to the Owner pursuant to which the Contractor will specify its plan for meeting and monitoring the

Owner's employment requirements. The plan shall comply with the provisions set forth in **Exhibit D** and **Exhibit E**. The Contractor shall provide the Owner with such reports concerning its compliance with the construction employment plan as the Owner shall require.

3.18 LINES AND GRADES; SURVEY

3.18.1 The Contractor agrees that the Work shall be erected within the building lines and contract limit lines established in the Contract Documents and other information made available to the Contractor.

3.18.2 The Contractor shall engage a land surveyor registered in the Commonwealth of Massachusetts to establish, and the Contractor shall be responsible for the accuracy of, base lines for the Work.

3.18.3 The Contractor shall establish and plainly mark such points, lines and grades as are necessary to assure that location, orientation and elevations established for each structure or element of the Work are in accordance with the lines and elevations shown on the Drawings.

3.18.4 After the perimeter foundation walls are in place, the Contractor shall verify that lines and grades meet the requirements of the Drawings and Specifications. Such verification shall be provided by a registered land surveyor or professional engineer who shall record actual as-built lines and grades on the as-built Drawings.

3.18.5 During the progress of the Work the registered land surveyor or professional engineer shall record actual as-built lines and grades on the as-built Drawings. The Contractor shall, from time to time, furnish to the Owner surveys certified by a registered land surveyor, in such form as may be required by the Owner, of the location of all improvements and utilities on the Site.

ARTICLE 4 OWNER

4.1 INFORMATION AND SERVICES REQUIRED OF THE OWNER

4.1.1 If available, the Owner shall furnish to the Contractor surveys describing the physical characteristics, legal limitations for the Site, and a legal description of the Site.

4.1.2 The Owner may furnish the Contractor with certain reports, plans, studies, tests, information and other documentation relating to utilities and subsurface and other conditions affecting or relating to the performance of the Work (the "Site Conditions Documents"). The Contractor represents that it has thoroughly studied and is familiar with the Site Conditions Documents which it has received. In the case of Site Condition Documents to be supplied by the Owner after execution of the Agreement, the Contractor shall study and become familiar with such documents. The Contractor shall advise the Owner in writing of any errors, omissions, inconsistencies discovered by the Contractor in its review of the Site Condition Documents. The

Contractor represents further that it has examined the Site and local conditions and as they are developed will carefully study and compare the Contract Documents with each other and with conditions at the Site, and with the Site Conditions Documents. Unless otherwise specifically stated, the Owner does not assume any responsibility for the accuracy or completeness of the Site Condition Documents. Such information and data is furnished to the Contractor for its informational value, but the Owner does not hold out such information or data to the Contractor as being complete nor as an accurate or approximate indication of surface, subsurface or other conditions. No claim for extra cost or any extension of the Contract Time resulting from reliance by the Contractor on the Site Conditions Documents shall be allowed except as expressly provided in the Contract Documents.

4.1.3 Information or services required of the Owner under the Contract Documents and requested in writing by the Contractor shall be furnished by the Owner, if available, with reasonable promptness so as to endeavor to avoid delay in the orderly progress of the Work.

4.1.4 The Contractor will be furnished, free of charge, four (4) copies of the Contract Documents.

4.1.5 The Owner may, but shall not be required to, forward instructions to the Contractor through the OPM. If communicated directly to the Contractor by the Owner, the Owner will endeavor to provide copies of such communications to the OPM and the Architect.

4.2 CONFIDENTIAL INFORMATION

4.2.1 The Contractor shall not disclose, at any time during or after the Work, either directly or indirectly, any confidential records, knowledge or information which the Contractor may acquire about the Project or the Owner, except as may be required by law or by order of a court of competent jurisdiction. The Contractor shall treat all information relating to the Project and all information supplied to the Contractor by the Owner, the OPM, or the Architect as confidential and proprietary information of the Owner and shall not permit its release to third parties or make any public use of such information without the Owner's prior express written authorization. The Contractor shall require all Subcontractors to comply with this provision.

4.3 TAX EXEMPTION

4.3.1 The Owner, as an authority of the Commonwealth of Massachusetts, is exempt from certain taxes. The Owner's taxpayer exemption number is 042-379-317. The Contractor hereby acknowledges that the Contract Sum has been established based upon the understanding that the Owner is exempt from certain taxes. It is therefore required that the Contractor and Subcontractors purchasing building materials and supplies to be used in construction of the Project (including rental charges for construction vehicles, equipment and machinery rented specifically for use on the site of the Project or while being used exclusively for the transportation of materials for the Project) ("Construction Materials") apprise vendors of the tax-exempt status of the Owner, so that certain taxes will not be imposed upon the purchase of

Construction Materials. At the time of purchase of Construction Materials, the purchaser shall provide the vendor with copies of certificates or other documentation necessary to permit the sale of such Construction Materials to be exempt from sales, use and other applicable taxes imposed by any state or federal taxing authority. If such taxes are paid on any Construction Material used in the construction of the Project, the Contractor shall be responsible for reimbursing the Owner, whether the purchases were made by the Contractor, a Subcontractor or Supplier, the full amount of such taxes and the Owner shall have the right to recover any such amounts not promptly reimbursed by reducing any payment due the Contractor under the Contract by such amount. Taxes not applicable to the Owner include, but may not be limited to: (a) Sales and Use Tax imposed by the Commonwealth under M.G.L. c. 64H, §6 (f) and c. 64I, § 7 on Construction Materials; and (b) Federal Excise Taxes as applied to articles which are taxable under Chapter 32 of the Internal Revenue Code of 1954, as amended.

ARTICLE 5 INDEMNIFICATION

5.1 CONTRACTOR'S INDEMNITY

5.1.1 The Contractor shall indemnify, defend with counsel acceptable to the Owner, keep and save harmless the Commonwealth, the State University, and the Owner, including their respective board members, trustees, directors, officers, contractors, consultants, agents, employees, and other representatives, in both their respective individual and official capacities, against all liabilities, suits, claims, damages, losses, expenses, penalties, fines, fees including, but not limited, to attorneys' fees, expert witness fees and other legal expenses (including fees and expenses in connection with any alternative dispute resolution process) and other costs and liabilities caused by, arising out of, resulting from, or incidental to, the following, each to the full extent allowed by the laws of the Commonwealth of Massachusetts and not beyond any extent that would render these provisions void or unenforceable:

(a) breach or default under or failure to perform or comply with the terms of the Contract by the Contractor, any Subcontractor or Supplier, or others for whom the Contractor is or becomes responsible;

(b) negligent acts or omissions of the Contractor, any Subcontractor or Supplier, or others for whom the Contractor is or becomes responsible;

(c) infringement of any patent or trademark, or violation of any copyright, right of privacy or any similar right protected by any law affecting intellectual property arising out of or relating to the use of methods, processes or information, or products or other materials or property, in connection with performance of the Work by the Contractor, any Subcontractor or Supplier, or others for whom the Contractor is or becomes responsible, or otherwise relating to the Work;

(d) violation of any Applicable Law in connection with performance of the Work by the Contractor, any Subcontractor or Supplier, or others for whom the Contractor is or becomes responsible;

(e) violation of or noncompliance with the conditions of any Permits and Approvals by the Contractor, any Subcontractor or Supplier, or others for whom the Contractor is or becomes responsible;

(f) failure of the Contractor, any Subcontractor or Supplier, or others for whom the Contractor is or becomes responsible to pay any federal, state or local taxes based upon gross receipts, income, purchases, rentals or sales, the use of any property, unemployment insurance or any other social security or social benefit taxes applicable to employees of the Contractor, any Subcontractor or Supplier, or others for whom the Contractor is or becomes responsible, or any other taxes imposed in connection with the Contract or the Work;

(g) personal injury, sickness, emotional distress, disease or death directly or indirectly caused by, arising out of, resulting from, or incidental to the performance of the Contract or otherwise relating to the Work or any act or omission of the Contractor, any Subcontractor or Supplier, or any other party for whose acts or omissions the Contractor is or becomes liable;

(h) loss or damage to any property of the Contractor, and loss or damage to any property of Subcontractor, Supplier, or other parties for whom the Contractor is or becomes responsible;

(i) claims by Subcontractors, Suppliers, or others against the Contractor or the Owner on account of amounts due or claimed to be due to such Subcontractor, Supplier, or others in connection with the performance of the Work;

(j) loss or damage to property owned by the Owner or any third parties located on or about the Site, in whole or in part arising out of, resulting from, or incidental to the performance of the Work or any acts or omissions of the Contractor, any Subcontractor, Supplier, or any other party for whom the Contractor is or becomes responsible;

(k) neglect or failure to construct the Work within the building lines, or by reason of any encroachment by any element or portion of the Work, or any part or projection thereof, on adjoining land if such encroachment shall result from the Contractor's failure to construct the Work within said building lines;

(l) release or threatened release of any hazardous material which: (i) was brought onto the Site by the Contractor, or any Subcontractor, Supplier, or any other party for whom the Contractor is or becomes responsible; or (ii) was negligently removed from, handled on, or disposed of on the Site by the Contractor, any Subcontractor, Supplier, or any other party for whom the Contractor is or becomes responsible, regardless of the source or origin of such hazardous material or the method of deposit of such hazardous material on the Site or, in the case of the removal of any hazardous material from the site, on the Site to which such hazardous material was removed;

(m) claims or assertions by any separate contractor of disruption, delay or loss caused by interference by the Contractor (or its Subcontractors or others for whom the Contractor is or becomes responsible) with or hindrance of the progress or completion of work being performed by separate contractor, or failure of the Contractor or any Subcontractor, Supplier, or any other party for whom the Contractor is or becomes responsible, to cooperate reasonably with such separate contractor; and

(n) failure of the Contractor, any Subcontractor or Supplier, or others for whom the Contractor is or becomes responsible to comply with their obligations to not use undocumented workers to perform any part of the Work.

Such agreement and obligation of the Contractor shall not be construed to negate, abridge, or otherwise reduce any right or remedy which would otherwise exist as to any party or person described in this Section 5.1.

5.1.2 Provisions of this Section 5.1 shall be for the benefit of each party indemnified hereunder with the same force and effect as if each individual were in privity of contract with the Contractor, and each party so indemnified shall have the right to bring a direct action against the Contractor to enforce this indemnity. Each party so indemnified is hereby made a third party beneficiary of the Contract with respect to the provisions of this Section 5.1.

5.1.3 In connection with any and all claims against the Owner, the OPM or the Architect or their consultants or separate contractors, or any of their Subcontractors, agents or employees, by any employee of the Contractor, any Subcontractor or Supplier, or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the Contractor's indemnification obligation under this Section 5.1 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 worker's compensation acts, disability benefit acts or other employee benefit acts.

5.1.4 In the event that a claim, demand or action is asserted against a party indemnified under this Section 5.1 with respect to which the Contractor is obligated to indemnify

such party in accordance with this Section, such party shall give timely notice to the Contractor of such claim and may request that the Contractor undertake the defense of such claim with counsel reasonably satisfactory to such indemnified party and without cost to such indemnified party, or the indemnified party may undertake the defense of such claim, with counsel satisfactory to the Contractor, in which case the Contractor shall cooperate and assist in the defense and resolution of such claim, and shall be responsible for all costs of defense, judgments, settlements and other liabilities as provided in this Section 5.1. Failure of the indemnified party to notify the Contractor as provided in the preceding sentence shall not waive, release or otherwise affect the indemnification obligations of the Contractor hereunder, except to the extent that the Contractor establishes that such failure to give notice has prejudiced the Contractor in the defense of such claim.

5.1.5 The indemnification obligations of the Contractor under the Contract shall survive the termination or expiration of the Contract and completion of the Work.

5.1.6 The obligations of the Contractor under this Article 5 shall not extend to the liability of the Architect, his agents or employees, arising out of the performance of the Architect's obligations under the Contract Documents.

ARTICLE 6 SUBCONTRACTORS

6.1 SUBCONTRACTS

6.1.1 All Subcontractors shall look solely to the Contractor for payment for their Work performed in accordance with the Contract Documents except as expressly otherwise permitted by law. The Contractor shall furnish the Owner with executed copies of all Subcontracts promptly upon execution thereof.

6.1.2 When subcontracting with filed sub-bidders filed pursuant to M.G.L. c. 149, § 44F, Contractor shall use exclusively the form of subcontract set forth in M.G.L. c. 149, § 44F(4)(c), a copy of which is attached as **Exhibit H** to the Agreement.

6.1.3 Contractor shall make payments to Subcontractors in accordance with M.G.L. c. 30, § 39F. For the purposes of this Contract, the word "forthwith" appearing in paragraph (1)(a) of M.G.L. c. 30, § 39F shall be deemed to mean "within five (5) business days".

6.1.4 The Contractor hereby conditionally assigns to the Owner all Subcontracts now or hereafter executed by the Contractor in connection with the Work and in accordance with the requirements of the Contract Documents.

(a) Such assignment shall become an effective and present assignment only upon a termination by the Owner of the Contract in accordance with the

provisions of the Contract Documents and only as to those Subcontracts which the Owner explicitly accepts and assumes in writing. The Owner shall have the sole option to determine which Subcontracts the Owner shall accept as aforesaid.

(b) This Subsection 6.1.4 shall serve as the instrument of assignment at such time as the assignment provided for above becomes effective. The Contractor agrees, however, at the Owner's request, to execute whatever instruments the Owner requests to confirm such assignment.

6.1.5 The Contractor shall maintain and distribute to the Owner, the OPM, and the Architect a Project Directory listing the names, addresses, email addresses, and telephone numbers of the principal members of the staff of each Subcontractor in addition to any other information requested by the Owner or the Architect regarding Subcontractors. The Contractor shall update such Project Directory periodically during the Project. The principal contact for each Subcontractor and his/her home telephone number shall be indicated in the Project Directory so that such person may be reached in emergency situations.

ARTICLE 7 OTHER WORK

7.1 OWNER'S RIGHT TO PERFORM WORK AND TO AWARD SEPARATE CONTRACTS

7.1.1 In addition to the Work required to be performed under the Contract, the Owner may perform other work related to the Project at the Site with its own forces, have other work performed by utility suppliers, or award separate contracts for such work or other work on the Site under these or other conditions of the contract. If the fact that such other work is to be performed is not noted in the Contract Documents, notice thereof will be given to the Contractor prior to commencement of such other work.

7.1.2 If, after commencement of the Work, the plans of the Contractor and any such separate contractors performing work in connection with the Project, or other contractors, are inconsistent with respect to methods, scheduling, progress or otherwise, the Contractor shall promptly take all steps necessary to coordinate its Work with that of other contractors. The Contractor shall have no claims against the Owner or such separate contractors performing work in connection with the Project or other contractors for any delays arising from joint use of any work area or staging area, or from joint use of access. All coordination undertaken by the Contractor shall be acceptable to Owner in all respects.

7.2 MUTUAL RESPONSIBILITY

7.2.1 The Contractor shall provide the Owner, utility suppliers and other separate contractors proper and safe access to the Site and a reasonable opportunity for the delivery and storage of materials and equipment and the execution of their work, and for reasonable access to, and use of, the Contractor's hoisting facilities, if provided, and temporary electric, water and

sanitary facilities. Disputes arising with respect to delivery or storage of materials or equipment, or otherwise relating to coordination of the Work under the Contract with the work of utility suppliers or separate contractors shall initially be submitted to the Architect. Recognizing the constraints imposed upon the Contractor by the requirements of this Section, the Owner agrees to give the Contractor as much advance notice as is practicable of the particular needs of separate contractors and utility suppliers for access to the Site and joint use of the Site and site facilities so as to minimize the impacts upon the Contractor's scheduling and operations. The Contractor shall cooperate with the Owner, utility suppliers and separate contractors, and require and enforce the cooperation of its Subcontractors in such manner as to permit the expeditious, efficient connection of utilities and to facilitate completion of the Project as a whole and completion of specific parts of the Project for early use or occupancy by the Owner in accordance with the Project Schedule.

7.2.2 If any portion of the Contractor's Work depends, for proper execution or results, upon other work of the Owner or any such utility supplier or other separate contractors, the Contractor shall, prior to proceeding with that portion of the Work, inspect and promptly report to the Architect and the Owner, in writing, any delays, discrepancies or defects in such other work discoverable as a result of prudent examination, testing and observation by the Contractor that render such other work unavailable or unsuitable to receive Contractor's Work. Failure of the Contractor to so report shall constitute an acknowledgment that such other work is fit and proper to receive the Contractor's Work, except as to defects not so discoverable.

ARTICLE 8 INSPECTION AND TESTING

8.1 INSPECTION AND TESTING

8.1.1 If the Contract Documents, laws, ordinances, rules, regulations or orders of, or conditions imposed by, any government entity having jurisdiction over the Project require any portion of the Work to be inspected, tested or approved, the Contractor shall give the OPM (with a copy to the Architect), the Owner's testing agents or consultants, and if applicable, government entities requiring such inspection, testing or approval, timely notice (at least five (5) full business days) prior to the commencement of Work or operations requiring such inspection, testing or approval so the Architect, such government entities and agents or consultants may perform or observe such inspection, testing or approval. The Contractor shall perform and bear all costs of such inspections, tests and approvals, unless otherwise provided in the Contract Documents. Except in the event of an unforeseen emergency, Work or operations requiring such inspection, testing or approval shall not be performed at times other than during the normal working day without the prior approval of the Owner. The Contractor will provide all required assistance (including, without limitation, labor, tools, equipment and transportation) as the Architect or such government entities or agents or consultants may request in connection with such inspection, testing or approval. The Contractor shall make all necessary arrangements at its expense to permit the Architect to make factory, shop or other inspections of materials or products ordered for the Work and in the process of manufacture, fabrication or extraction or in storage at locations other than the Site of the Work. Where certain testing and inspection requirements are required by the Contract Documents to be performed at the expense of the Owner, the Owner will

retain the services of testing laboratories, agencies or consultants, to perform such tests or inspections and render such services as may be required to verify that the Work fulfills the requirements and intent of the Contract Documents. Such services will be performed in a manner consistent with the requirements of the Owner and the various agencies having jurisdiction over the Work and in accordance with sound standards of professional architectural and engineering practice applicable thereto. The Contractor and Subcontractors shall place their personnel at the Architect's disposal for field checking during any inspection period. When layouts of the building and site work are to be made, the Contractor shall notify the OPM and the Architect in sufficient time so that they may be present.

8.1.2 The Contractor shall make no claim for delay or extra costs or extension of the Contract Time arising directly or indirectly out of reasonably required inspection or testing or out of the Contractor's failure to give timely notice so as to permit performance or observance of inspections, testing or approvals. Inspections and testing of the Work shall not relieve the Contractor of any obligations under the Contract Documents. Without limiting any other provisions hereof, defective work shall be made good and unsuitable materials may be rejected, notwithstanding that such Work and materials have been previously inspected by the Architect and accepted or estimated for payment or paid for.

8.2 SPECIAL TESTING

8.2.1 If the Owner or the Architect determines that any portion of the Work requires special inspection, testing, or approval beyond that required in the Contract Documents, the OPM, upon written authorization from the Owner, or the Owner, will instruct the Contractor to order such special inspection, testing or approval, and the Contractor shall give notice as provided in Section 8.1 hereof. If such special inspection or testing reveals a failure of the Work to comply strictly with the requirements of the Contract Documents, the Contractor shall correct such Work and bear all costs of such inspection, testing and corrections, including compensation for the additional services of the Architect and other consultant made necessary by such failure; otherwise the Owner shall bear the costs of such inspection or testing, and an appropriate Change Order shall be issued. In no event shall the Contractor be entitled to any claim for delay or extra cost or extension of the Contract Time as a result of any such inspection, testing or corrections.

ARTICLE 9 CONTRACT TIME

9.1 DEFINITIONS

9.1.1 The Contract Time is the period of time stated in the Agreement to achieve Substantial Completion of the Work, as may be adjusted in accordance with the Contract.

9.1.2 The date of commencement of the Work is date of the issuance of a Notice to Proceed by the Owner for a portion, or all, of the Work.

9.1.3 The Date of Substantial Completion of the Work, or a designated portion thereof, is the date certified by the Architect when the requirements of the Contract Documents have been satisfied. Substantial Completion of the Work shall not be deemed to be achieved until:

(a) the Owner can occupy or utilize the Work, or designated portion thereof, for the use for which it is intended; and

(b) only minor items of Work remain incomplete, which minor items of Work may be completed without interference with the Owner's intended use of the Work; and

(c) the minor items of Work remaining incomplete do not exceed one percent (1%) of the Contract Sum; and

(d) all certificates of inspection, testing and approval, including final and unconditional certificates of occupancy and operating permits for elevators and any mechanical apparatus, which may be required by law to permit full use and occupancy of the completed Work by the Owner, have been actually obtained; and

(e) all operating and maintenance manuals, warranties and guarantees, parts lists, Project Directory, repair source lists and samples, and all other similar documents or materials required to be delivered to the Owner under the Contract Documents have been delivered to, and approved by, the Architect; and

(f) the Contractor has complied with all other obligations under the Contract Documents.

For purposes of this Article 9, Substantial Completion refers to Substantial Completion of the entire Project. In the event of any question or dispute as to the date of Substantial Completion, such question or dispute shall be determined by the Architect in its sole discretion, and neither the Architect nor the Owner shall have any liability to the Contractor arising out of such determination made by the Architect in good faith.

9.2 PROJECT SCHEDULE

9.2.1 The Contractor shall, within 14 days of execution of the Agreement, submit to the Owner and Architect for review and approval, a construction progress schedule in the form of a "critical path method" schedule ("CPM Schedule"). The CPM Schedule shall incorporate the submittal schedule required under Subsection 3.8.1.1. After the CPM Schedule has been so approved, it shall be the Project Schedule.

9.2.2 The CPM Schedule shall be provided in form and detail acceptable to the Owner and prepared in accordance with the Contract Documents, with an adequate number of

activities and milestones to properly describe the nature and sequence by which the Contractor intends to carry out the Work and to allow the Owner to properly coordinate the work for any separate contractors and to properly plan on use of portions of the Project prior to Final Completion.

9.2.3 The CPM Schedule must exhibit, but may not be limited to, the following characteristics: The logic diagrams shall be based on an activity on node concept, the presentation of the logic network shall be time scaled, various analyses of the schedule shall be provided, including, but not limited to, listings of activities by code, by predecessor, by successor, by trade and by float.

9.2.4 If requested by the Owner, the CPM Schedule shall be supplemented by, or converted to, a bar chart schedule. The CPM Schedule and bar chart schedule shall be updated regularly, at least weekly. The Contractor shall report to the Owner weekly on the status of the Work compared to the current CPM Schedule.

9.3 PROGRESS AND COMPLETION

9.3.1 Upon execution by the Owner of the Agreement and issuance of a written Notice to Proceed by the Owner, the Contractor agrees to proceed with the Work, or portion thereof covered by a Notice to Proceed with Construction, promptly, continuously, and diligently. The Contractor agrees to adhere to the Project Schedule, to achieve all interim completion milestones, if any, and to achieve Substantial Completion of the Work on or before the Substantial Completion Date set forth in the Agreement. It is agreed that TIME IS OF THE ESSENCE of the Contract Documents.

9.3.2 Recognizing that, from time to time during the progress of the Work, the Owner may find it necessary to establish the current status of performance under the Contract Documents, the Contractor shall, at the request of the Owner, promptly provide statements, documents or certificates to the Owner regarding the status of the Work, compliance of the Work with the Contract Documents, compliance by the Contractor or any Subcontractor with the Contract Documents, and such other matters within the scope of the Contractor's performance under the Contract Documents as the Owner may require.

9.3.3 The Contractor shall submit a detailed written report on the status of the Work compared to the current Project Schedule for the Owner's review with each Application for Payment. Each such report shall reflect all items required by the Contract Documents. If the Contractor fails to complete any activity by its latest scheduled completion date, the Contractor shall, within seven (7) days of such failure, submit a written statement showing how the Contractor intends to correct such failure and return to the current Project Schedule. The Contractor shall update the Project Schedule weekly to reflect changed logic, adjusted and modified sequences of Work, and other identifiable changes, including, without limitation, specific strategies for continuing to meet the Substantial Completion Date. With its monthly report on the status of the Work, the Contractor shall submit a written certification by the Contractor's Project Manager that

the Project Schedule submitted with the report is the actual schedule being utilized for execution of the Work and that the Work is progressing in accordance therewith.

9.3.4 If, at any time, the Owner determines that the progress of the Work is delayed or has not reached the level of completion required by the current Project Schedule, the Owner shall have the right to direct the Contractor to take all measures necessary to recover any lost time and return the Work to the level of progress required by the current Project Schedule ("Recovery Measures"). In such event, within five (5) business days of receiving the Owner's direction to take Recovery Measures, the Contractor shall notify the Owner in writing of the steps which the Contractor proposes to take to remedy the situation, shall furnish Owner with an updated Project Schedule reflecting such Recovery Measures, and shall implement such steps promptly. Such Recovery Measures shall continue until the progress of the Work is returned to the stage of completion required by the current Project Schedule. If the Contractor disputes the Owner's direction to the Contractor to take Recovery Measures, the Contractor shall, nonetheless, promptly and diligently perform the Recovery Measures and shall have no right whatsoever to fail or refuse to take Recovery Measures once so directed by the Owner. If, and to the extent the delays giving rise to a direction from the Owner to the Contractor to take Recovery Measures are not Excusable Delays, the Contractor shall not be entitled to an extension of the Contract Time or an adjustment of the Contract Sum in connection with undertaking Recovery Measures. If and to the extent that any delay giving rise to a direction from the Owner to implement Recovery Measures is an Excusable Delay, the Contractor shall be entitled to assert a claim in accordance with the Contract.

9.4 EXTENSION OF THE CONTRACT TIME AS A RESULT OF DELAY EVENT

The provisions of this Section 9.4 govern, and constitute the Contractor's sole remedy, if a Delay Event is encountered by the Contractor in the course of performance of the Work. Any claim for an extension of the Contract Time associated with a Change in the Work shall be governed by, and subject to, the provisions of Article 13. If the Contractor is entitled, subject to the provisions of this Section 9.4, to an extension of the Contract Time by reason of a Delay Event, then an extension of the Contract Time may be granted for the period of the necessary delay caused to Critical Path Activities, determined in accordance with, and subject to, this Section 9.4, and other applicable provisions of the Contract Documents. A Change Order effecting such extension will be furnished to the Contractor within a reasonable period after such determination. No extension of the Contract Time shall be granted to the Contractor under the Contract (except as expressly authorized in connection with a Change in the Work) unless the requirements of this Section 9.4 shall have been satisfied.

9.4.1 Types Of Delay Events

"Delay Event" shall be limited to any of the following acts, omissions, events or conditions which delays completion of the Work or prevents performance of the Contractor's obligations under the Contract and which could not be prevented by the Contractor even though the Contractor were to take all appropriate care to avoid or diminish the adverse consequences of the Delay Event:

(a) Unavoidable casualty;

(b) Act of war, civil disorder, riot or similar occurrence;

(c) Order, legislation, judgment or other official action, of any governmental body, agency or official having jurisdiction over the Project;

(d) Any act or omission of the Owner or the Architect, such as a temporary stoppage or suspension of Work, not resulting from, or caused, in whole or in part, by any act or omission of the Contractor, any Subcontractor or any other person or entity for whom the Contractor is responsible;

(e) Any work of utility companies or municipal departments that may enter the Site to make changes in utility equipment or to place new utility equipment, to the extent such delay does not result, in whole or in part, from the act or omission of the Contractor, any Subcontractor or any other person or entity for whom the Contractor is responsible;

(f) Unusually severe weather preventing the Contractor from engaging, on a particular day, at least 75% of the labor force and equipment that was scheduled for engagement on Critical Path Activities on that particular day for at least 50% of that day; and

(g) Strikes or work shutdowns caused by labor disputes and lockouts (other than lockouts caused by the Contractor, Subcontractors or Sub-Subcontractors unrelated to the Contractor's forces or the forces of any Subcontractor).

The financial difficulties of the Contractor (or any Subcontractor, supplier or other party for whom the Contractor is responsible) or the consequences thereof, shall not constitute a Delay Event.

9.4.2 NOTICE AND PROCEDURES AS TO DELAY EVENTS

9.4.2.1 Initial Notice. The Contractor shall provide the Owner with an initial written notice of any occurrence, event or condition which the Contractor claims (or may intend to claim) constitutes a Delay Event. Such initial written notice shall be submitted to the Owner within five (5) business days of the commencement of such occurrence, event or condition, and shall:

(h) State in detail the factual circumstances which form the basis of the delay, and the current and anticipated future effects on the Contractor's performance and Project Schedule; and

(i) State the date of commencement of the delay and the duration or expected duration of the delay with respect to each affected portion of the Work.

The submission of such initial written notice within the time period provided above shall be a condition precedent to any extension of the Contract Time. Neither the OPM and nor the Architect nor any other agent, consultant or employee of either shall have authority to modify or waive, expressly or by implication, such condition precedent or the corresponding condition precedents set forth in Subsection 9.4.2. and any action, inaction or statement by any of them to such effect shall not be binding upon the Owner.

9.4.2.2 Second Notice. Following submission of the initial written notice, not later than fifteen (15) business days of the commencement of any occurrence, event or condition which the Contractor claims (or intends to claim) constitutes a Delay Event, the Contractor shall submit to the OPM written notice of such occurrence, event or condition. This written notice shall (i) state whether an extension of the Contract Time is claimed and the Contractor's alleged contractual entitlement thereto; (ii) state in detail the factual circumstances which form the basis of the delay; (iii) identify Work activities alleged to have been delayed; (iv) state the calendar dates on which the Work activities were delayed and are anticipated to be further delayed; (v) state the number of calendar days by which the Contractor is requesting the Contract Time to be extended; (vi) fully and completely state the CPM analysis justifying the request, including a schedule impact (fragnet) analysis worksheet prepared in a time-scale to graphically illustrate the effect of the alleged delay on affected activities; (vii) state the date of commencement and duration or expected duration of the delay and its effect on the various portions of the Work; and (viii) state any other information reasonably requested by Owner.

9.4.2.2.1 The Contractor shall provide such detailed supporting documentation, including, where appropriate, an updated Project Schedule indicating all of the activities affected by the circumstances which form the basis for the claim. The submission of such written notice within the time period provided above shall be a condition precedent to any extension of the Contract Time.

9.4.2.2.2 Because the possible necessity for an extension of the Contract Time might materially alter the scheduling, plans and other actions of the Owner and because, with sufficient opportunity, the Owner might (if it knew of the Contractor's claim) attempt to mitigate the effect of a delay for which an extension of the Contract Time was to be claimed, and only oral notice might cause disputes as to the existence or substance of such claim, and because delayed notice might seriously hinder or prevent the Owner's investigation of the pertinent facts, the giving of written notice within the time periods stated above in Subsections 9.4.2.1, and 9.4.2.2 shall be of the essence of the Contractor's obligations, and failure of the Contractor to comply with these requirements shall be deemed a conclusive, full and final waiver of any claim for extension of the Contract Time.

9.4.2.2.3 It shall in all cases be presumed that no extension or further extension of the Contract Time is appropriate unless the Contractor shall affirmatively demonstrate the Contractor's entitlement to such extension under all applicable terms and conditions of the Contract Documents. To this end, the Contractor shall maintain adequate records supporting any claim for an extension of the Contract Time, and in the absence of such records, the foregoing presumption shall be conclusive.

9.4.3 Limitations On Delay Computation

9.4.3.1 Whenever the Contractor claims an extension of the Contract Time as a result of a Delay Event, only the unavoidable delay caused to completion of the Work as a whole shall be considered in measuring or evaluating the extent of the delay. If, for example, extra work can be (or could have been) performed along with the regular Work called for by the Contract Documents so as to reduce or eliminate a delay in the progress of the Work or some portion thereof, without causing necessary delay to such regular work, no claim for extension of the Contract Time shall be granted. An extension of the Contract Time may be granted only for Delay Events affecting Critical Path Activities. In any event, even though a Delay Event meets all of the above conditions, an extension may be granted only to the extent that the effect of such cause cannot be (or could not have been) avoided or mitigated by the exercise of all reasonable precautions, efforts and measures (including planning, scheduling and rescheduling, resequencing Work activities, and reallocating and redeploying work forces), whether before or after the occurrence of the cause of delay. If a concurrent delay occurs (*i.e.*, either a single delay resulting from two or more causes where at least one delay is the responsibility of the Contractor, or multiple delays, where at least one delay is the responsibility of the Contractor), no extension of the Contract Time shall be granted to the Contractor during the period of any such concurrent delay for which the Contractor is responsible.

9.4.4 Sole Remedy

9.4.4.1 Except as expressly provided in the Contract Documents, the Contractor assumes the financial risk of all delays of any kind or duration, whether or not within the contemplation of the parties and whether foreseeable or unforeseeable. The Contractor shall have no right to rescind or terminate the Contract except as expressly provided herein, and the Contractor shall have no cause of action under any theory of quasi-contract or *quantum meruit* by reason of any such delay. The Contractor agrees that extensions of the Contract Time, as provided herein, shall be the Contractor's sole and exclusive remedy against the Owner in the event the Work is delayed, except to the extent otherwise provided in Subsections 9.4.4.2 and 9.4.4.3 below.

9.4.4.2 Adjustment of the Contract Sum as a Result of Certain Delays

If, and to the extent that, the Contractor establishes that all of the following have occurred:

(j) The Contractor is entitled to an extension of the Contract Time pursuant to this Section 9.4,

(k) The Contractor suffered Compensable Losses (as defined below) as a result of the delay, and

(l) The Contractor could not have avoided or mitigated such Compensable Losses despite having taken all reasonable precautions, efforts and measures to avoid or reduce the amount thereof, including, without

limitation, mitigating delays by resequencing Work activities, and reallocating and redeploying work forces of the Contractor, Subcontractors and Sub-Subcontractors to the maximum extent practicable.

In such event the Owner may adjust the Contract Sum by an amount equal to the Contractor's Compensable Losses directly attributable to the Delay Event giving rise to the extension of the Contract Time. A Change Order effecting the adjustment to the Contract Sum will be furnished to the Contractor within a reasonable period after such determination.

"Compensable Losses" include only the reasonable verified amounts of necessary direct costs of: (i) idle time of equipment; (ii) idle time of workers; and (iii) moving of equipment and extended field office overhead expenses. No mark-up of Compensable Losses will be allowed for home office overhead or profit. For purposes of the Contract, "extended field office overhead" expenses shall mean those indirect costs incurred at the Site (sometimes also referred to as general conditions costs or job site overhead costs): (i) which cannot reasonably be allocated to any specific work item within the Work, and (ii) which increase or decrease as a function of the duration of the Contract Time. Examples of extended field office overhead items include: project manager, superintendent, temporary utilities and temporary facilities, clerical staff, office equipment and supplies and project trucks and automobiles. The Contractor shall provide to the Owner all documentation and information reasonably requested by the Owner to substantiate the sum of Compensable Losses.

9.4.4.3 The following clauses (a) and (b) of this Subsection 9.4.4.3 are included herein pursuant to requirements of M.G.L. c. 30, § 39O. In the event that a suspension, delay, interruption or failure to act of the Owner increases the cost of performance to any Subcontractor, that Subcontractor shall have the same rights against the Contractor for payment for an increase in the cost of its performance as provisions (a) and (b) give the Contractor against the Owner, but nothing in provisions (a) and (b) shall in any way change, modify or alter any other rights which the Contractor or the Subcontractor may have against each other.

(a) The Owner may order the 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 Owner; provided, however, that if there is a suspension, delay or interruption for fifteen (15) days or more or due to a failure of the Owner to act within the time specified in the Contract, the Owner shall make an adjustment in the Contract Sum equal to the actual increase in the cost of the Work but shall not include any profit to the Contractor with respect to such increase; and provided further, that the Owner shall not make any adjustment in the Contract Sum under this provision for any suspension, delay, interruption or failure to act to the extent that such is due to any cause for which the Contract provides for an equitable adjustment of the Contract Sum under any other contract provisions.

(b) The Contractor must submit the amount of a claim under provision (a) hereof to the Owner 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 submission of the Application for Payment seeking final payment under the Contract and, except for costs due to a suspension order, the Owner shall not approve any costs in the claim incurred more than twenty (20) days before the Contractor notified the Owner in writing of the act or failure to act involved in the claim.

ARTICLE 10 PAYMENTS AND COMPLETION

10.1 SCHEDULE OF VALUES

10.1.1 Prior to the first Application for Payment, and as a condition precedent to the making of any payments to the Contractor, the Contractor shall submit to the OPM, for approval by the Owner, a preliminary Schedule of Values allocating the Contract Sum among the various portions of the Work, prepared in such form and detail and supported by such data to substantiate its accuracy as the Owner may require. Such Schedule of Values shall be based upon, and consistent with, the Project Schedule. The Schedule shall be reviewed and revised from time to time to reflect changes in the Work, or if found by the OPM to be inaccurate. Once approved by the Owner and so long as the Schedule of Values remains up to date and accurate, the approved Schedule of Values shall be used as a basis for the Contractor's Applications for Payment.

10.2 APPLICATIONS FOR PAYMENT

10.2.1 The Contractor shall submit to the OPM and the Architect for review, no later than the first day of each month, a draft of the Application for Payment which the Contractor intends to submit that month. Such draft Applications shall not be considered the Application for Payment for purposes of Subsection 10.2.2.

10.2.2 The Contractor shall submit to the OPM and the Architect an itemized Application for Payment for Work completed as of the end of the preceding month, based upon the approved Schedule of Values and supported by such data substantiating the Contractor's right to payment as the Owner may require, including invoices with check vouchers attached, payrolls, receipted bills, requisitions from Subcontractors and Suppliers, and reflecting the retainage set forth in the Contract. The format of such Applications for Payment shall be AIA Documents No. G702 and G703 (Contractor's Application for Payment) or such other form as may be required by the Owner. The Contractor shall submit its Applications for Payment no later than the fifth (5th) calendar day of each month for each payment period constituting the preceding calendar month. The Application for Payment shall show the total cost of the Work performed and materials furnished by the Contractor and each Subcontractor to date, based on a percentage of the work completed.

10.2.3 Unless otherwise provided in the Contract Documents, such Application for Payment may include materials or equipment not incorporated in the Work but delivered and suitably stored at the Site and, if approved in advance in writing by the Owner, in its sole discretion, payment may be requested for materials or equipment suitably stored at some other location agreed upon in writing, all in accordance with Section 10.9, below. Payments for materials or equipment

stored on or off the Site shall be conditioned upon submission by the Contractor of bills of sale, invoices or such other documents, information or procedures as may be required by the Owner to establish the Owner's title to such materials or equipment free and clear of all liens, claims, security interests or encumbrances (collectively referred to in the Contract Documents as "liens"), or otherwise to protect the Owner's interests, and if off-site storage is involved, compliance in full with the requirements of Section 10.9, below.

10.2.4 The Contractor warrants that title to all Work, materials and equipment covered by an Application for Payment will pass to the Owner automatically without further action by the parties, free and clear of all liens or other encumbrances and upon the first to occur of: (i) incorporation in the construction, or (ii) the receipt of payment by the Contractor. Transfer of title to the Owner shall not relieve the Contractor of any of its duties or obligations under the Contract Documents or of any responsibility or liability for the safe delivery and safeguarding, custody, or warehousing of the materials or equipment, nor shall it constitute any waiver of the Owner's right to absolute fulfillment by the Contractor of all of the terms of the Contract, nor shall it commence any warranty or guarantee period prior to Substantial Completion. The Contractor warrants that no Work, materials or equipment covered by an Application for Payment shall have been acquired by the Contractor, or by any other person performing Work at the Site or furnishing materials or equipment for the Project, subject to an agreement under which an interest therein or an encumbrance thereon is retained by the seller or any other secured party or otherwise imposed by the Contractor or any other person or entity.

10.2.5 At the request of the Owner, each Application for Payment shall be accompanied by an affidavit or certificate from each Subcontractor stating that it has been paid all amounts due it on the basis of the previous periodic payment(s) to the Contractor, or stating the amount not so paid and the reason for any discrepancy. In the event of any such discrepancy, the Contractor shall furnish its own written explanation to the Owner through the OPM. If requested by the Owner, the Contractor shall furnish a statement accounting for the disbursement of funds received under prior Applications for Payment.

10.2.6 Each Application for Payment shall include a monthly status report on the progress of the Work, including those items more particularly set forth in the Contract, in these General Conditions, and in the Specifications. The Contractor acknowledges that such status report is of significant importance to the Owner in determining whether the Contractor is entitled to payment pursuant to such Application for Payment, and failure to deliver such status report, in form, substance, or detail satisfactory to the Owner, shall be deemed to be just cause for withholding payment to the Contractor. Any waiver by the Owner of the requirement of submission of such status report (or any portion thereof) with respect to any Application for Payment shall not be deemed to be a waiver of the Owner's right to require the full and complete status report with respect to any future Application for Payment. Each status report shall include the items specified in the Agreement, in these General Conditions, and in the Specifications and any other reports or items requested by the OPM or the Owner. All status reports shall be in form and substance satisfactory to the Owner.

10.3 CERTIFICATES FOR PAYMENT

10.3.1 Within five (5) days after receipt of the Contractor's Application for Payment, the Architect will 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 Owner and Contractor in writing its reasons for withholding a Certificate for Payment, or any portion thereof, as provided in Subsection 10.6.1.

10.3.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's observations, that the Work has progressed to the point indicated, that to the best of the Architect's knowledge, information and belief the quality of the Work indicated therein is in accordance with the Contract Documents (subject to evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to 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 the Certificate), that the submission includes all necessary prevailing wage submittals and that the Contractor is entitled to payment in the amount certified. The Architect shall not certify the final payment until an inspection for Final Completion has been performed and the Owner has acted affirmatively on the Architect's recommendation that the Project be accepted.

10.4 PROGRESS PAYMENTS TO THE CONTRACTOR

10.4.1 The Owner shall make payments in accordance with the following provisions:

(a) Within thirty (30) days after receipt from the Contractor, at the place designated by the Owner if such a place is so designated, of an Application for Payment with respect to which the Architect has issued a Certificate for Payment, the Owner 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 Owner, upon certification by the Contractor that it is the lawful owner and that the materials are free from all encumbrances, but less (1) a retention based on the Owner's estimates of the fair value of its claims against the Contractor and less (2) a retention not exceeding five (5) percent of the approved amount of the periodic payment. After the receipt of an Application for Payment requesting final payment and within sixty-five (65) days after (a) the Contractor achieves Final Completion or achieves Substantial Completion of the Work so that the value of the Work remaining to be done is, in the estimate of the Owner, less than one percent of the original Contract Sum, or (b) the Contractor achieves Substantial Completion of the Work and the Owner takes possession for occupancy, whichever occurs first, the Owner shall pay the Contractor the entire balance due on the Contract less (1) a retention based on the Owner's 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 based on the record of payments by the Contractor to the Subcontractors under the Contract if such record of payments indicates that the Contractor has not paid Subcontractors as provided in M.G.L. c. 30, § 39F. If

the Owner 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 an Application for Payment for final payment until twenty-four (24) days after receipt of such Application for Payment from the Contractor and bearing the Architect's Certificate for Payment, at the place designated by the Owner 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.

(b) The Owner may make changes in any Application for Payment submitted by the Contractor and the payment due on said Application for Payment shall be computed in accordance with the changes so made, but such changes or any requirement for a corrected Application for Payment shall not affect the due date for the periodic payment or the date for the commencement of interest charges on the amount of the period payment computed in accordance with the changes made, as provided herein; provided, that the Owner may, within seven (7) days after receipt, return to the Contractor for correction, any Application for Payment which is not in the required form or which contains computations not arithmetically correct and, in that event, the date of receipt of such Application for Payment shall be the date of receipt of the corrected Application for Payment in proper form and with arithmetically correct computations. The date of receipt of the Application for Payment received on a Saturday shall be the first working day thereafter.

(c) The Applications for Payment shall be submitted to the OPM and the Architect and the date of receipt shall be marked on the Application. All Applications for Payment shall contain a separate item for each subtrade and a column listing the amount paid to such Subcontractor as of the date of the Application for Payment is filed. The person making payment for the Owner 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.

(d) A certificate of the Architect to the effect that the Contractor has achieved Substantial Completion or Final Completion of the Work shall, subject to the provisions of M.G.L. c. 30, §39J, be conclusive for the purposes of this Section.

10.4.2 Within twenty-five (25) days after receipt of a Certificate for Payment issued by the Architect, the Owner shall make payment of amounts properly due to the Contractor, subject to the terms and conditions of the Contract Documents.

10.4.3 Upon receipt of payment from the Owner, the Contractor shall promptly pay each Subcontractor out of the amount paid to the Contractor on account of such Subcontractor's work, the amount to which the 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 its lower tier Subcontractors in similar manner.

10.4.4 Neither the Owner nor the OPM nor the Architect shall have any obligation to pay or to see to the payment of any monies to any Subcontractor except as set forth in this Section 10.4.

10.4.5 (a) Forthwith after the Contractor receives payment on account of an Application for Payment, the Contractor shall pay to each Subcontractor the amount paid to the Contractor 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 Contractor.

(b) Not later than the sixty-fifth (65th) day after each Subcontractor substantially completes its Work in accordance with the plans and specifications, the entire balance due under the subcontract, less amounts retained by the Owner as the estimated cost of completing the incomplete and unsatisfactory items of Work, shall be due the Subcontractor; and the Owner shall pay that amount to the Contractor. The Contractor shall forthwith pay to the Subcontractor the full amount received from the Owner less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the Subcontractor by the Contractor.

(c) Each payment made by the Owner to the Contractor pursuant to subparagraphs (a) and (b) of this paragraph for the labor performed and the materials furnished by a Subcontractor shall be made to the Contractor for the account of that Subcontractor; and the Owner shall take reasonable steps to compel the Contractor to make each such payment to each such Subcontractor. If the Owner has received a demand for direct payment from a Subcontractor for any amount which has already been included in a payment to the Contractor or which is to be included in a payment to the Contractor for payment to the Subcontractor as provided in subparagraphs (a) and (b), the Owner shall act upon the demand as provided in this Subparagraph 10.4.5.

(d) If, within seventy (70) 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 Contractor, less any amount retained by the Owner as the estimated cost of completing the incomplete and unsatisfactory items of work, the Subcontractor may demand direct payment of that balance from the Owner. The demand shall be by a sworn statement delivered to or sent by certified mail to the Owner, and a copy shall be delivered to or sent by certified mail to the 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 Owner and delivered or so mailed a copy to the Contractor, the Contractor may reply to the demand. The reply shall be by a sworn statement delivered to or sent by certified mail to the Owner, and a copy shall be delivered to or sent by certified mail to the Subcontractor at the same time. The reply shall contains a

detailed breakdown of the balance due under the subcontract, including any amount due for extra labor and materials furnished to the Contractor and of the amount due for each claim made by the Contractor against the Subcontractor.

(e) Within fifteen (15) days after receipt of the demand by the Owner, but in no event prior to the seventieth day after substantial completion of the subcontract work, the Owner 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 Contractor, less any amount (i) retained by the Owner 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 Contractor in the sworn reply; provided that the Owner shall not deduct from a direct payment any amount as provided in part (iii) if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown required by subparagraph (d). The Owner shall make further direct payments to the Subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in parts (i) and (ii) of this subparagraph.

(f) The Owner shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of subparagraph (e) in an interest-bearing joint account in the names of the Contractor and the Subcontractor in a bank in Massachusetts selected by the Owner or agreed upon by the Contractor and the Subcontractor and shall notify the Contractor and the Subcontractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the amount in the account, including accrued interest, as provided in an agreement between the Contractor and the Subcontractor or as determined by decree of a court of competent jurisdiction.

(g) All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to subparagraph (f) shall be made out of amounts payable to the 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 Contractor and in the order of receipt of such demands from Subcontractors. All direct payments shall discharge the obligation of the Owner to the Contractor to the extent of such payment.

(h) The Owner shall deduct from payments to the Contractor amounts which, together with the deposits in interest-bearing accounts pursuant to subparagraph (f), are sufficient to satisfy all unpaid balances of demands for direct payment received from Subcontractors. All such amounts shall be earmarked for such direct payments, and the Subcontractors shall have a right in such deductions prior to any claims against such amounts by creditors of the Contractor.

(i) If the Subcontractor does not receive payment as provided in subparagraph (a) or if the Contractor does not submit Application for Payment 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 (a), the Subcontractor may demand direct payment by following the procedure in subparagraph (d)

and the 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 Contractor. Thereafter the Owner shall proceed as provided in subparagraphs (e), (f), (g) and (h).

10.5 PAYMENT NOT ACCEPTANCE

10.5.1 No Certificate for Payment, nor any progress payment made by the Owner, nor any partial or full use or occupancy of the Work or the Project by the Owner, shall constitute an acceptance of the Work, or any portion thereof, that is not in accordance with the Contract Documents.

10.6 PAYMENTS WITHHELD

10.6.1 The Architect may decline to certify payment, and may withhold its Certificate for Payment, in whole or in part, to the extent necessary to protect the Owner, if in the Architect's opinion the Architect is unable to make representations to the Owner as provided in Subsection 10.3.2. In such case, the Architect will notify the Owner and the Contractor as provided in Subsection 10.3.1. The Architect will issue a Certificate for Payment for the amount for which it is able to make all of the representations to the Owner set forth in Subsection 10.3.2. The Architect may also decline to issue a Certificate for Payment or, because of subsequently discovered evidence or subsequent observations, it may nullify or amend the whole or any part of any Certificate for Payment previously issued, or, notwithstanding that the Architect has issued a Certificate for Payment, the Owner (in addition to and without limitation of any other rights and remedies of the Owner under the Contract Documents) may withhold payment of any amounts claimed to be due by the Contractor and certified for payment by the Architect, in each case to such extent as may be necessary in order to provide for retention covering the fair value of any possible claims the Owner may have against the Contractor, which amounts may include, but shall not be limited to, the fair value of costs or losses arising from:

(a) defective Work not remedied,

(b) third party claims filed or reasonable evidence indicating probable filing of such claims,

(c) failure of the Contractor to make payments properly due to Subcontractors or Suppliers,

(d) reasonable evidence that the Work cannot be completed in accordance with the Contract Documents for the unpaid balance of the Contract Sum,

(e) reasonable evidence of any previous overpayment or improperly issued payment upon an Application for Payment,

(f) improper prior allocation of the Owner's contingency,

(g) damage to the Owner or another contractor,

(h) reasonable evidence that the Work is not progressing in accordance with the Project Schedule or will not be completed within the Contract Time,

(i) failure to carry out the Work in accordance with the Contract Documents or other default by the Contractor under, or failure of the Contractor to comply with any provisions of, the Contract Documents,

(j) claims for damages for delay (including accrued liquidated or actual damages, if any), or

(k) any lien, attachment or other encumbrance not discharged as required by the Contract Documents.

If and when the grounds set forth above are removed without cost to the Owner, payment may be requested and shall be made for amounts withheld because of such grounds, less any cost or damage incurred by the Owner as a result thereof.

10.7 SUBSTANTIAL COMPLETION

10.7.1 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 Subsection 9.1.3, the Contractor shall prepare and submit to the OPM for delivery to the Architect and to the Owner all documents, records, permits and licenses required by the Contract Documents in a form satisfactory to the Architect and the Owner, and a monetized punch list of items to be completed or corrected. Failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

10.7.2 When on the basis of an inspection the OPM and the Architect determine that the Work or a designated portion thereof is substantially complete, and when the Contractor has complied with and satisfied all conditions precedent to Substantial Completion provided for in the Contract Documents, the Architect will then prepare and execute a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall state the respective 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, which time shall not exceed thirty (30) days. The Contractor shall complete or correct the punch list items within the period specified on the Certificate of Substantial Completion or, if the nature of the corrective work is such that it cannot reasonably be completed, using best efforts, within this period the Contractor shall notify the Owner and the Architect, in writing, of all reasons why the punch list items cannot be completed and provide a schedule for the completion of this work. In the event that Final Completion is delayed beyond thirty (30) days after the Substantial Completion Date, the Owner may withhold from the amounts due to the

Contractor an amount sufficient to pay any additional costs incurred in connection with the Architect's additional work arising from such delays. Upon such completion and/or correction, the Architect shall promptly reinspect the Work.

10.7.3 Warranties and guarantees 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.

10.8 FINAL COMPLETION AND FINAL PAYMENT

10.8.1 At such time as the Contractor has fully performed the Work, including all obligations set forth in the Contract Documents and all Work listed on the Certificate of Substantial Completion, the Contractor shall give notice to the Architect and the Owner. The Contractor shall also provide a certificate to the Owner regarding completion of the Work in accordance with the Contract Documents, compliance by the Contractor with the Contract Documents, and such other matters within the scope of the Contractor's performance under the Contract Documents as the Owner may require. Such certificate shall be in form and substance acceptable to the Owner.

10.8.2 Upon receipt of written notice that the Work is ready for final inspection and acceptance, the Architect and the OPM will promptly make such inspection and, if they find the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a Certificate of Final Completion stating that, based on its observations and inspections, the Work has been completed and that to its best knowledge, information and belief the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor, and noted in said certificate, is due and payable.

10.8.3 The Architect's Certificate of Final Completion will constitute a further representation that the conditions precedent to the Contractor's being entitled to final payment as set forth in this Section 10.8, and elsewhere in the Contract Documents, have been fulfilled in accordance with the requirements of the Contract Documents.

10.8.4 Notwithstanding anything to the contrary in this Section 10.8 contained, if the Owner elects to take occupancy of the Project in stages, final inspection may be performed, at the request of the Contractor or the Owner, in stages (i.e., in respect of the portion of the Work to be occupied by the Owner and such systems, (e.g., mechanical, sanitary, etc.), as are necessary for the Owner's occupancy of such portion of the Project). The provisions of this Section 10.8 shall apply to any staged final inspection, except that in no event shall Final Completion be deemed to have occurred until final inspection has occurred with respect to the entire Work.

10.8.5 Final Completion shall mean the completion of all of the Work in accordance with all of the terms and conditions of the Contract Documents and acceptance thereof after final inspection in accordance with Subsections 10.8.1 through 10.8.4. The date of issuance of the Owner's written notice of acceptance shall be designated as the date of Final Completion.

Upon Final Completion, the Owner may take over the Site for permanent use and occupancy. A final Application for Payment may be made at any time after the date of Final Completion.

10.8.6 Prior to, and as a condition precedent to, Final Completion, all of the following matters shall have been resolved and documents and items shall have been received and approved in writing by the Owner:

(a) final documents of similar nature to those required by the Contract Documents in connection with any Application for Payment hereunder; and

(b) all final permits, approvals, (including, without limitation, the approval of the Owner's insurance company, if required) certificates and affidavits (including, without limitation, certificates in respect of elevator, plumbing, sprinklers, electrical systems and life safety systems, required by governmental authorities) and authorizations for use and occupancy of the Project required by any authority having jurisdiction, including an unconditioned permanent and full Certificate of Occupancy and any other necessary occupancy and use permits (unless such Certificate is not issued solely for reasons as to which the Contractor has no responsibility or over which it has no control); and

(c) full record "as built" Drawings in the Owner's CADD software approved by the Architect; records and related data including all field notes and daily reports of all the Work, all in accordance with the requirements of the Contract Documents; and

(d) satisfactory proof that all claims arising out of the Work have been released or bonded; and

(e) acknowledgment of prior payments (to the extent permitted by law) from all Subcontractors and the Contractor; and

(f) the Architect's certificate certifying that the Work is complete; and

(g) a written statement from the Architect that all practical orientation and operating instructions for all materials, systems, and equipment have been satisfactorily completed, and that all required training of Owner's personnel has been completed; and

(h) a satisfactory report by the Contractor which is approved by the Architect that all mechanical systems have been and are properly balanced; and

(i) a certificate of insurance for product liability and completed operations insurance coverage for the three year period following Final Completion; and

(j) an affidavit that all payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or its property might in any way be responsible, have been paid or otherwise satisfied; and

(k) consent of surety, if required, to final payment; and

(l) if required by the Owner, other data establishing payment or satisfaction of all such obligations, such as receipts and releases arising out of the Contract, to the extent and in such form as may be designated by the Owner; and

(m) delivery of all spare parts required to be submitted pursuant to the Contract Documents; and

(n) delivery of all Contract Documents and other related materials, with the exception of one record contract set, by the Contractor to the Owner or certification by the Contractor that all such documents were lawfully disposed; and

(o) a general release of the Owner from the Contractor and each Subcontractor.

If the final documentation submitted by the Contractor is determined not to be complete by the Owner or if the Owner deems the Work incomplete in any respect, the Contractor shall promptly complete any such Work and shall promptly resubmit the final documentation.

10.8.7 The Owner shall not be required to make final payment of any remaining amounts due to the Contractor until Final Completion has occurred. The making of final payment shall not constitute a waiver of any claims by the Owner against the Contractor. The Owner shall have the right, in its sole and absolute discretion, but the Owner shall have no obligation, to accept the Work and make final payment prior to Final Completion, subject to such incomplete items which shall be set forth in a notice sent by the Owner to the Contractor of items, completion of which are necessary for Final Completion. In such event, an amount equal to 200% of the cost of such uncompleted items (as determined by the Architect) (plus any amounts being withheld pursuant to Subsection 10.6.1) shall be retained by the Owner. The amount so retained shall not become due and payable to the Contractor until the Architect certifies that said item or items so listed have subsequently been completed, the Architect's and the OPM's inspection shall have confirmed such to be correct, and the Contractor shall have submitted an Application for Payment with respect to such items. If such items are not completed within forty-five (45) days after such notice to the Contractor, the Owner may, in its sole discretion, cause the same to be completed by such persons or entities as the Owner may choose, and the cost of same shall be paid by the Contractor or deducted, to the extent possible, from any sums then due the Contractor hereunder.

10.8.8 After Final Completion and receipt by the Owner of a proper final Application for Payment, the Owner will calculate the amount of the final payment as follows:

(a) Take the sum of the remaining contract balance; and

(b) Subtract amounts, if any, which the Owner is withholding pursuant to Subsection 10.6.1; and

(c) Subtract the aggregate of all previous payments made by the Owner.

If at any time the aggregate of previous payments made by the Owner exceeds the amount due the Contractor, the Construction Manger shall reimburse the difference to the Owner.

10.8.9 The acceptance of final payment shall constitute a release and 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 payment.

10.9 STORAGE OF MATERIALS OFF-SITE

10.9.1 The Contractor and its Subcontractors shall obtain prior written approval from the Owner, for permission to store at off-site locations materials or equipment to be incorporated in the Work, for which progress payments will be requested. No out-of-state storage will be permitted by the Owner. Any and all charges for storage, including insurance, shall be borne solely by the Contractor. Before approval, the Owner may require, without limitation, (i) evidence that the location is properly secure, (ii) proper proof of insurance and proof of satisfactory contractual arrangements for transportation to the Site, (iii) proof that Owner will obtain clear title to the materials, and (iv) a certificate from the Contractor stating:

(a) The name of the Contractor and/or Subcontractor leasing or owning the storage area;

(b) The location of such storage space, including the storage area; i.e., the entire premises or certain areas of a warehouse giving the number of floors or portions thereof, and a certification that the Contractor has visited such location, verified the storage of such material or equipment therein or thereon, and payment of all current storage charges;

(c) The date on which the material or equipment is first stored; and

(d) A description, including quantities and the value of the material or equipment stored.

10.9.2 The Contractor shall furnish to the Owner, not less often than once per month, a current inventory of all materials or equipment being stored at any off-site location.

10.9.3 The Contractor and its Subcontractors shall mark each sealed carton or other item with the name of the Project and the Owner, and all materials or equipment stored off-site shall be segregated to the extent required by the Owner, the OPM, or the Architect.

10.9.4 Payment for materials or equipment stored off-site shall be at the sole discretion of the Owner. Title to materials or equipment stored off-site shall be transferred at the time at which the Owner pays for them.

ARTICLE 11 SAFETY AND PROTECTION

11.1 SAFETY PRECAUTIONS AND PROGRAMS

11.1.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work, including, but not limited to, compliance by the Contractor and all Subcontractors with all safety precautions and programs required by the Occupational Safety and Health Act, other applicable laws and regulations, the Contract Documents, and any insurance carrier providing insurance coverage for the Owner or the Contractor in connection with the Project. Without limiting the generality of the foregoing, the Contractor shall, promptly after execution of the Agreement, prepare a written safety program which shall be submitted to the OPM and the Owner and issued to all Subcontractors and all forces employed on the Work. Such program shall include weekly safety meetings with representatives of all Subcontractors working on the Site, and the Contractor shall prepare, circulate and maintain on file at the Site minutes of all safety meetings. The Contractor shall ensure that all forces employed on the Work are free of drugs and alcohol and are provided with all necessary personal protective equipment. The Contractor's written safety program shall identify, by trade, tasks for which specific safety planning and precautions are necessary and the steps necessary to implement such precautions. The Contractor shall plan hazardous sequences in advance, shall institute procedures for reporting any injuries and providing for emergency medical care and shall report to the OPM when such sequences are to commence and when completed.

11.1.2 The Contractor shall designate a responsible member of its organization at the Site whose duty shall be the prevention of accidents. This person shall be the Contractor's Project Superintendent unless otherwise designated by the Contractor in writing to the OPM.

11.2 SAFETY OF PERSONS AND PROPERTY

11.2.1 The Contractor shall take all necessary precautions for the safety of, and shall provide all protection necessary to prevent damage, injury or loss to:

(a) all employees on the Work and all other persons or other entities who may be affected thereby;

(b) all the Work and all materials and equipment to be incorporated therein, whether in storage on or off the Site; and

(c) other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, improvements and utilities not

designated for removal, relocation or replacement in the course of construction.

Without limitation, the Contractor shall provide security watch service at all such times as are necessary to protect the interests of the Contractor and the Owner and to provide for the safety and security of the general public, employees and agents of the Owner, the OPM and the Architect, and other persons who may be affected by the Work, and to exclude unauthorized persons from the Site.

11.2.2 The Contractor shall give all notices and comply with all Applicable Laws bearing on the safety of persons or property or their protection from damage, injury or loss.

11.2.3 The Contractor shall erect and maintain, as required by existing conditions and progress of the Work, all reasonable safeguards for safety and protection, including fencing and posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owners and users of adjacent utilities and other improvements as more particularly set forth in the Specifications.

11.2.4 The Contractor shall satisfactorily conduct its work at all highway crossings and along all highways, street and other ways in accordance with the permission and requirements of the proper authorities. Vehicular traffic shall be routed over temporary detours during construction when required to maintain proper flow of traffic. The Contractor shall plan and conduct its operations in such a manner that the continuous flow of traffic is uninterrupted and with a minimum of inconvenience to the general public. The Contractor shall prepare a plan for construction and traffic management acceptable to the Owner and the municipal authorities. The Contractor shall arrange for and provide all policemen required by the town or city in which the Project is located to be present at or adjacent to the Site for traffic control purposes. The cost of all policemen so required shall be borne by the Contractor and included in the Contract Sum.

11.2.5 The Contractor shall assume all responsibility for the protection of property of adjacent owners so far as affected by its operations. The Contractor shall provide temporary protection at all openings in the outside fences or walls to prevent unauthorized persons from obtaining access during the night and at other non-working hours. The Contractor acknowledges that there may be Construction projects being undertaken on adjacent properties and will coordinate the Work with such other projects as required.

11.2.6 Blasting operations, if any, shall be specifically approved in advance in writing by the Architect, shall be conducted by experienced personnel and in strict accordance with the rules and regulations of the Massachusetts Department of Public Safety governing the keeping, storage, use, manufacture, sale, handling, transportation or other disposition of explosives, and such other rules and regulations as may be promulgated from time to time by authorities having jurisdiction, and shall not be commenced until the Contractor provides written evidence to the Owner that XCU coverage is in force and effect as required by Subsection 12.2.3 hereof. 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.

11.2.7 The Contractor shall promptly remedy all damage or loss (excluding damage or loss insured under the property insurance carried by the Owner, if any, as provided in the insurance requirements contained in the Contract Documents, but including losses within the deductibles of such insurance) to any property referred to in Subsection 11.2.1 caused in whole or in part by the Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable and for which the Contractor is responsible under this Article 11, except to the extent that the damage or loss is attributable to the acts or omissions of the Owner, the OPM or the Architect. The foregoing obligations of the Contractor are in addition to its obligations under Article 5.

11.2.8 The Contractor shall not load or permit any part of the Work to be loaded so as to endanger its safety.

11.2.9 The Contractor shall provide and maintain in good operating condition suitable and adequate fire protection equipment, and shall comply with all recommendations regarding fire protection made by the representatives of the insurance company or companies carrying insurance on the Work or by the local fire chief or fire marshal. The Site shall be kept orderly and clean, and all combustible rubbish shall be removed from the Site daily.

11.2.10 The Contractor shall at all times protect excavations, trenches, structures, materials, equipment and fixtures from damage from rain water and other weather, ground water, back-up or leakage of sewers, drains and other piping, and from water of any other origin and shall remove promptly any accumulation of water at the Project Site. The Contractor shall provide and operate all pumps, piping and other equipment necessary to this end. The Contractor shall remove snow and ice which might create a hazard on or about the Site or result in damage or delay.

11.2.11 The Contractor shall take all necessary precautions to prevent loss or damage caused by vandalism, theft, burglary, pilferage, or unexplained disappearance of property of the Owner forming part of the Work, or located within those areas of the Project to which the Contractor has access. The Contractor shall have full responsibility for the security of such property of the Owner and shall reimburse the Owner for any such loss, damage or injury resulting from vandalism, theft, burglary, pilferage, unexplained disappearance or any other cause, to the extent that the same is not covered by the Owner's insurance.

11.2.12 In the event the Contractor discovers any active utility line which had not yet been disclosed in any survey, it shall cease all work in the immediate area which may affect such line and shall promptly notify the Owner, OPM, and the affected utility company. The Contractor shall not restart work without notice from and approval of the OPM.

11.2.13 The Contractor shall at all times provide and maintain adequate protection against weather so as to preserve the Work, materials, equipment, apparatus, and fixtures free from injury or damage.

11.2.14 The Contractor shall protect all finished surfaces of the Work, including the jambs and soffits of all openings used as passageways or through which materials are handled, against any possible damage resulting from the conduct of Work by the Contractor or by any separate Contractors.

11.2.15 In the event of temporary suspension of Work and during inclement weather, or whenever further directed by the Owner or Architect, Work and materials shall be adequately protected against damage. The Contractor shall take special precautions to prevent damage to materials and work installed in cold or freezing weather, by providing adequate temporary heat and suitable enclosures or covering. The ground surfaces under footings and under pipe lines, and all concrete and masonry work, shall be protected against frost and freezing. The minimum measures to be taken shall be in accordance with the requirements for winter conditions as set forth in the current edition of ACI-318-83 "Building Code Requirements for Reinforced Concrete" published by the American Concrete Institute. The Contractor shall provide temporary weathertight enclosures for all exterior openings to protect the Work from freezing weather and to maintain proper building temperatures for operations of all trades.

11.2.16 The Contractor shall provide ventilation of enclosed areas during construction as required to permit proper curing and drying out, and to prevent excessive humidity, moisture and condensation. Ventilation shall be by natural or artificial means as required by the conditions involved.

11.2.17 The Contractor shall control the safe handling and storage of all explosives, welding materials, acetylene and oxygen tanks, and other equipment required for blasting operations, welding and cutting work at the Site. All welding materials and equipment shall be removed promptly from the premises and upon completion of the welding and cutting work. No welding torch or other open flames will be used within any building without a fire watch with an appropriate fire extinguisher or within one hour of quitting time.

11.2.18 The Work shall be performed in such a manner as to prevent fire, and during any Work involving a fire hazard the Contractor shall take all necessary precautions against fires starting and spreading on the Site, within buildings and temporary structures. The Contractor shall provide and maintain sand buckets, suitable fire extinguishers and hoses where and as required to provide adequate means of extinguishing fires. Fire prevention requirements may be directed by the Owner's insurance agents and the local Fire Department. Permanent standpipes shall be made available during construction. Gasoline and other flammable liquids shall not be stored within buildings; shall be stored in and dispensed from U.L. listed safety containers in conformance with N.B.F.U. recommendations and the requirements of all authorities having jurisdiction. The Contractor shall make arrangements for periodic inspection by town/city fire protection authorities and insurance underwriters' inspectors, cooperate with them and promptly carry out their recommendations.

11.3 EMERGENCIES

11.3.1 In any emergency affecting the safety of persons or property, the Contractor shall act, at its discretion, to prevent threatened damage, injury or loss and shall as promptly as conditions permit notify insurance carriers and the OPM of the nature of the emergency and circumstances related thereto. Immediately thereafter, the Contractor shall prepare a written report setting forth in detail the action taken and describing in detail all circumstances and conditions which are related to such action. Any additional compensation or extension of time claimed by the Contractor on account of emergency work shall be determined as provided in Article 13 for Changes in the Work.

ARTICLE 12 BONDS AND INSURANCE

12.1 PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND

12.1.1 The Contractor shall furnish a performance bond and a labor and materials payment bond, each for the full amount of the Contract Sum. The performance bond and the labor and materials payment bond shall be in the unmodified form of the AIA A312-2010 performance and payment bonds. The Owner reserves the right to specify any alternative form for the performance or payment bond. Each bond shall name the Owner as obligee and each shall be issued by a surety company qualified to do business under the laws of the Commonwealth of Massachusetts and whose name appears on the United States Treasury Department Circular 570. The bond premiums shall be included in the Contract Sum and shall be paid by the Contractor. If the Agreement provides for the imposition of liquidated or actual damages in the event that the Contractor fails to complete the Work within the Contract Time, then the obligations assumed by the surety under the performance bond shall include the payment of such liquidated or actual damages. These bonds shall remain in effect for the entire Guarantee Period, as defined in Subsection 14.2.2. All bonds shall be executed in the required number of counterparts and shall be submitted to the Owner for insertion into the Contract Documents prior to the execution of the Agreement.

12.2 CONTRACTOR'S LIABILITY INSURANCE

12.2.1 The Contractor shall purchase and maintain such insurance as will protect it and the other parties specified or referred to in Subsection 12.2.10 below from claims referred to below which may arise out of or result from the Contractor's operations under the Contract, whether such operations be by itself or by any Subcontractor or by anyone directly or indirectly employed by any of them or by anyone for whose acts any of them may be liable.

12.2.2 The Contractor shall purchase and maintain during the life of the Agreement:

(a) Insurance sufficient to discharge its obligations under all applicable workers' compensation laws of the Commonwealth of Massachusetts and the United States.

(b) Employer's liability insurance with minimum limit per accident or disease of $1,000,000.

(c) Statutory disability and other employee benefit insurance.

12.2.3 The Contractor shall purchase and maintain commercial general liability insurance, which coverage shall be in a form no less broad than ISO CG 00 01 12 07 or its equivalent and covering the full scope of this contract with limits not less than $1,000,000 per occurrence and $2,000,000 aggregate for personal or bodily injuries and for property damage. A per occurrence limit of not less than $5,000,000 is acceptable. All policies issued shall include permission for partial or total occupancy of the premises by the Owner within the scope of the Contract. Such insurance shall include at least the following:

(a) Commercial general liability insurance, including all products, premises-operations, completed operations for at least three (3) years following acceptance and final payment, independent contractors, additional interests of employees, sudden and accidental pollution and contamination, and incidental medical malpractice, and including notice of occurrence and knowledge of occurrence endorsements satisfactory to the Owner.

(b) Blanket contractual liability insurance covering all liabilities assumed under the Contract Documents, including, but not limited to, the Contractor's obligations under Article 5 of the General Conditions.

(c) Coverage for the so-called "XCU" hazards (explosion, collapse of buildings, blasting, undermining, and damage to underground property). Before any blasting is done, the Contractor shall provide to the Owner written evidence that blasting damage is included in the Contractor's insurance coverage.

12.2.4 The Contractor shall purchase and maintain automobile liability insurance, which coverage shall be in a form no less broad than ISO CA 00 01 03 10 or its equivalent and covering all owned, non-owned and hired vehicles with a limit of not less than $1,000,000 per accident for bodily injury, including death and property damage.

12.2.5 The Contractor shall also purchase and maintain umbrella form excess liability insurance in the limits specified below and containing coverage no less restrictive than that required under Subsections 12.2.2, 12.2.3, and 12.2.4 above. The required primary insurance shall be listed as underlying coverage in the first layer of the umbrella policy. Nothing contained herein shall be interpreted to restrict or prohibit the Contractor from carrying, or requiring any of its Subcontractors to carry, insurance in addition to that required hereby. The Contractor's umbrella excess policies shall contain a minimum total occurrence and aggregate limit of $10,000,000.

12.2.6 The Owner shall have the right to require that the coverages and limits of liability set forth in Subsections 12.2.2, 12.2.3, 12.2.4, and 12.2.5 be expanded or raised if required by law or any lender of the Owner, or if in the Owner's judgment economic conditions or other factors so warrant. If additional costs are incurred because of raised limits, the additional cost shall be added to the Contract Sum. The Owner shall also have the right to reduce the coverages and limits of liability set forth in Subsections 12.2.2, 12.2.3, 12.2.4, and 12.2.5 if in the Owner's judgment the degree of risk associated with any portion of the Work warrants reduced coverage and limits of liability.

12.2.7 Insurance coverages similar to those required of the Contractor shall be provided by or on behalf of all Subcontractors to cover their operations performed under the Contract Documents. The Contractor shall be held responsible for compliance with and enforcement of the insurance requirements and for any modifications of these insurance requirements as they apply to Subcontractors. The Contractor shall not permit any Subcontractor to commence work until such Subcontractor has furnished evidence that insurance has been procured and certificates of insurance have been obtained by the Contractor providing that, in the event of non-renewal or cancellation of Subcontractor's policies, thirty (30) days advance written notice will be given to the Contractor by registered mail. Copies of such certificates and, upon Owner's written request, copies of the insurance policies shall be delivered to the Owner, who shall be designated as a certificate holder.

12.2.8 Prior to the commencement of the Work, the Contractor shall cause its insurance company or companies to provide insurance certificates, which shall be attached as **Exhibit G** to the Agreement, and, upon Owner's written request, copies of insurance policies acceptable to the Owner and the other additional insureds specified in Subsection 12.2.10 below evidencing the above coverages to be furnished the Owner and the other additional insureds specified in Subsection 12.2.10 below by the Contractor's insurance company. Such certificates and all insurance policies required by this Article 12 shall contain provisions requiring at least 30 days' prior written notice to the Owner and to other certificate holders of any cancellations or non-renewals of the policies. Certificates shall indicate effective dates and dates of expiration of policies. An additional certificate evidencing continuation of all insurance coverages required to remain in force after final payment shall be submitted with the application for final payment, and neither final payment nor any remaining retainage under this Contract shall be due until such certificate has been submitted to the Owner.

12.2.9 The Owner is to be furnished originals or certified copies of the policy or policies including all endorsements required to provide stated coverage within 10 days after commencement of Work under this Contract.

12.2.10 All insurance policies provided pursuant to the Contract shall be written by companies licensed to do business in the Commonwealth of Massachusetts and having an A.M. Best rating of A-, VIII or better, or otherwise acceptable to Owner, in its reasonable discretion, and shall be in form satisfactory to the Owner. All such policies shall name as additional insureds, under endorsements no less broad than CG 20/10 (11-85) or both CG 2026 (7/04 version) and CG 2037 (7/04 version), the Owner, affiliates and participants of the Owner, the State University, the

Commonwealth of Massachusetts, and any other parties as the Owner may identify by notice to the Contractor from time to time. All such policies shall contain provisions or endorsements necessary to assure coverage of claims by one additional insured against another additional insured. All required insurance policies are to be endorsed to state that the Contractor's policies shall be primary to all other insurance available to the Owner, which insurance shall be excess of all other valid and collectible insurance policies. The Contractor shall bear all costs of any amounts deductible, retained or self-insured under the policies required to be maintained by the Contractor.

12.2.11 The purchase of insurance to satisfy the above requirements, or the furnishing of certificates evidencing same, shall not be a satisfaction of the Contractor's liability under this Contract or in any way modify the Contractor's indemnification of the Owner.

12.2.12 Certificates and policies of insurance shall be filed with the Owner.

12.3 PROPERTY INSURANCE

12.3.1 The Owner shall purchase and maintain property insurance insuring against the perils of fire and extended coverage and including "all risk" builders' risk insurance for physical loss or damage to the Work, including all labor, materials, supplies, machinery, equipment, fixtures, temporary structures and all other work of whatever nature, used or to be used in or incidental to the construction, fabrication, erection or completion and testing of the Work, until Final Completion. Limits shall be 100% of the replacement value of the Work. Such insurance shall protect the interests of the Owner, the Contractor and all Subcontractors performing work at the Site, and the proceeds in case of loss may be held by the Owner and applied by it in the manner hereafter set forth. The Owner shall have power to adjust and settle any loss with the insurers, using due diligence to protect the interests of the Contractor and Subcontractors, subject to the rights of the Owner. The Owner's property insurance will not cover any tools, equipment, materials, supplies, temporary structures or other property owned or rented by the Contractor or Subcontractors which is not to be incorporated in the Work. The Contractor and Subcontractors assume these excluded risks, and waive all rights they may have against the Owner for damage to such items, and any policy of insurance covering the Contractor's own tools, equipment, facilities and other property against loss by physical damage shall include an endorsement providing that the underwriters waive their rights of subrogation against the Owner. Upon request, the Owner will furnish the Contractor with a certificate of such insurance coverage, which shall be attached as **Exhibit G** to the Agreement. In the event a claim is made on the Owner's builder's risk insurance policy, then, upon the Contractor's written request, the Owner will furnish the Contractor with a copy of the policy. The Contractor shall not be entitled to be listed as an additional named insured on such property insurance policy, but upon written request of the Contractor, the Contractor shall be a loss payee of such policy.

12.3.2 The Owner, as trustee for the parties in interest, shall receive the proceeds of any insurance upon the occurrence of an insured loss, and shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or in accordance with an award or finding of a court of competent jurisdiction. If after such loss no other agreement is made, replacement of damaged work shall be covered by an appropriate Change Order.

12.3.3 The Contractor shall be completely responsible for the proper care and protection of the Work. The Contractor shall be responsible for all losses within the deductible specified above, and the Contractor shall promptly, and in any event so as not to delay the progress of the Work, replace or reimburse the Owner for any property to the extent loss or damage to such property is within the deductible.

12.3.4 If there is a casualty resulting in a loss of more than 20% of the Contract Sum, as determined by the Owner, then the Owner may elect to terminate the Contract upon seven (7) days' notice to the Contractor and the Architect, and the Contractor shall be entitled to payment for all Work executed in accordance with the Contract Documents prior to said termination. Contractor shall have no claim for payment for loss of profit on that portion of the Work not executed.

12.3.5 The Owner and the Contractor waive all rights against (i) each other and the Subcontractors, consultants, agents and employees each of the other, and (ii) the Architect, the OPM, 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 Section 12.3 or any other property insurance applicable to the Work, except such rights as they may have to the proceeds of such insurance held by the Owner. The foregoing waiver afforded the Architect, its agents and employees shall not extend to the liability imposed by Subsection 5.1.4. The Owner or the Contractor, as appropriate, shall require of the Architect, separate contractors, and Subcontractors by written agreements, similar waivers each in favor of all other parties enumerated in this Subsection 12.3.5.

12.4 PROFESSIONAL LIABILITY INSURANCE

12.4.1 If the Work performed by the Contractor or any Subcontractor requires design and/or other professional services, the Contractor shall purchase and maintain, and shall cause any such Subcontractor to purchase and maintain, professional liability insurance for claims arising out of the negligent performance of such professional services. Professional liability coverage shall be written for minimum limits of $2,000,000 per claim and annual aggregate with a deductible no greater than $100,000. Professional liability coverage may be provided on a "claims made" basis if it includes a retroactive date that is no later than the effective date of this Agreement, and such insurance coverage shall be maintained for a period at least six (6) years after the earlier of: (1) the date of official acceptance of the completed Project by the Owner; (2) the date of the opening of the Project to public use; (3) the date of acceptance by the Contractor of final payment under this Agreement; or (4) the date of final completion of the Project and the taking of possession of the Project for occupancy by the Owner. Throughout the term of this Agreement and the entire six (6) year period, the Contractor and any such Subcontractor shall provide renewal certificates of professional liability insurance to the Owner as evidence that this coverage is being maintained. Alternatively, the six (6) year maintenance period for this coverage may be satisfied by providing an extended reporting period endorsement.

ARTICLE 13 CHANGES IN THE WORK

13.1 CHANGE ORDERS

13.1.1 The Contract Sum and the Contract Time may be changed only by duly executed Change Order. A Change Order signed by the Contractor indicates its agreement therewith, including the adjustment, if any, in the Contract Sum or the Contract Time. The compensation specified in the executed Change Order includes full payment for the changes in the Work covered thereby, and the Contractor waives all rights to any other compensation for the changes in the Work, damage, or expense including, but not limited to, all claims of cumulative impact.

13.1.2 The Owner, without invalidating the Contract, may order Changes in the Work consisting of additions, deletions or other revisions, the Contract Sum and the Contract Time being adjusted accordingly, if necessary. All such Changes in the Work shall be authorized by Change Order, and shall be performed under the applicable conditions of the Contract Documents.

13.1.3 With respect to Change Orders, upon the request of the Owner or the Architect, the Contractor shall submit to the Owner and the Architect, as soon as reasonably possible but in any event within twenty (20) days of the Contractor's receipt of a request therefor, an accurate written statement setting forth in detail, with a suitable breakdown for each trade and work classification, and including a breakdown of the items set forth in Subsection 13.1.5 below. The Contractor shall state in such proposal any change to the Contract Time required for the completion of the Work if the Change Order is approved. The Contractor shall promptly revise and resubmit such proposal if the Owner or the Architect determines that the proposal is not in compliance with the requirements of this Article, or that it contains errors or ambiguities. Once it has been reviewed and approved by the Owner and Architect, the Change Order shall be submitted to the Contractor for Execution.

13.1.4 The amount by which the Contract Sum shall be adjusted as a result of a Change Order shall be determined in one or more of the following ways, as the Owner in its sole discretion shall determine:

(a) by mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;

(b) by unit prices stated in the Contract Documents or subsequently agreed upon; or

(c) by the actual cost of the changed Work pursuant to Subsection 13.1.5.

13.1.5 The cost of such changed Work shall be computed as follows:

(a) the allowance for combined overhead, superintendence, and profit shall not exceed the following percentages of the net cost of the changed Work:

(i) for changed Work performed by the Contractor, ten (10) percent of the Contractor's net cost;

(ii) for changed Work performed by Subcontractors; ten (10) percent of the Subcontractors' combined net cost, plus ten (10) percent of the total amount paid the Subcontractors as Contractor's overhead, superintendence, and profit. In no event shall the aggregate markup for overhead, superintendence, and profit of the Contractor and all Subcontractors exceed twenty (20) percent.

(b) It shall be the Contractor's obligation to ensure an equitable division of the 10 percent paid to a Subcontractor with the Subcontractor's lower tier subcontractors. No additional markup shall be permitted for lower tier subcontractors.

(c) Contractor and each subcontractor involved in the changed Work shall, in addition to the cost of the changed Work plus allowable markups, be compensated for actual increased cost of required bonds. Bond increases shall be calculated based on the total cost of the change, including overhead, superintendence, and profit mark-ups.

(d) Cost of the Work Definition: Cost of the changed Work shall include the cost at prevailing rates for direct labor, material, and use of equipment, plus the cost of workmen's compensation insurance, liability insurance, federal social security and Massachusetts unemployment compensation. No mark-up shall be paid on the premium portion of overtime pay.

(e) Overhead, Superintendence and Profit Definition: The mark-ups by the Contractor or Subcontractor for overhead, superintendence, and profit shall include (and no additional payment shall be made for) general conditions, management, supervision, pricing, documentation, coordination, insurance, mobilization, record drawings, engineering/layout, small tools/computers, "tools of the trade", transit, staging/scaffolding, lifting, hoisting, dumpster, handling, clean-up, shipping/receiving, administration, accounting, punch-list, O&M manuals, estimator time, schedule updating, safety protection, certified payrolls, and the like.

(f) Where the changes in the Work involve both, an increase and a reduction in similar or related Work, the overhead, superintendence, and profit allowance shall be applied only to the cost of the increase that exceeds the cost of the reduction, i.e., the net cost.

(g) The Contractor shall review all quotations from Subcontractors and shall assure that pricing is fair and equitable before forwarding such proposed pricing to the Owner and the Architect.

13.1.6 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if the quantities originally contemplated are so changed in a proposed Change Order that application of the agreed unit prices to the quantities of Work proposed will cause substantial inequity to the Owner or the Contractor, the applicable unit prices shall be equitably adjusted.

13.1.7 Proposals as provided for in Subsection 13.1.4(a), above, shall be accompanied by a detailed breakdown of estimated costs of labor, materials, equipment and insurance, including a similar breakdown of costs for subcontracted Work. Such proposals shall

be subject to the Architect's review and acceptance by the Owner which will be based upon the Contractor's satisfactory demonstration that all costs and charges included therein are fair and reasonable, consistent with current price indexes for labor, materials and equipment, and do not in any way reflect exorbitant or non-applicable charges. Proposals shall be based on the approved Schedule of Values where applicable. The Contractor shall cooperate fully with the OPM and the Architect to whatever extent necessary in providing adequate substantiation of cost and in conducting negotiations pertaining thereto.

13.1.8 The Contractor shall not subcontract any Work under a Change Order unless work under the basic Contract of a similar type was previously subcontracted, or unless the Owner specifically approves and accepts such subcontracting in advance and in writing; and Subcontractors will not be allowed to further subcontract any Work under a Change Order without the prior written approval and acceptance of the Owner, unless Work under the basic Contract of a similar type was previously subcontracted by them. No mark-up shall be allowed on bond premiums of the Contractor or any of the Subcontractors.

13.2 CONSTRUCTION CHANGE DIRECTIVES

13.2.1 The Owner may order the Contractor to proceed with changes in the Work consisting of additions, deletions or other revisions prior to incorporation thereof in the Contract by issuance of a Change Order or in the event of the Owner and the Contractor to agree on an appropriate Change Order. All such changes shall be authorized by Construction Change Directives issued by the Owner through the Architect.

13.2.2 The Construction Change Directive shall include a description of the work involved and the basis for revision, if any, in the Contract Sum or Contract Time or both.

13.2.3 Within the time period specified in Subsection 13.1.3, the Contractor shall submit to the Architect and the Owner final costs for work required by the Construction Change Directive in accordance with Subsections 13.1.6 through 13.1.8, and request for change, if any, in the Contract Sum or Contract Time or both, for review by the Architect and inclusion in a subsequent Change Order.

13.3 DIFFERING SUBSURFACE OR LATENT PHYSICAL CONDITIONS

13.3.1 Pursuant to Section 39N of Chapter 30 of the Massachusetts General Laws, changes in the Work based on concealed subsurface or latent conditions shall be in accordance with the following:

If, during the progress of the Work, the Contractor or the Owner 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 Owner may request an equitable adjustment in the contract price of the Contract applying to the 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 Owner 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 from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the plans and Contract Documents and are of such a nature as to cause an increase or decrease in the cost of performance of the Work or a change in the construction methods required for the performance of the Work which results in an increase or decrease in the cost of the Work, the Owner shall make an equitable adjustment in the contract price and the Contract Documents shall be modified in writing accordingly.

13.4 CLAIMS FOR ADDITIONAL COST OR DAMAGES

13.4.1 If the Contractor wishes to make a claim for an increase in the Contract Sum by reason of any work required to be performed or materials furnished by it or by reason of any event, circumstance, occurrence, direction or interpretation, or if it wishes to make a claim for damages by reason of any act or omission of the Owner or the Architect, including, without limitation, any order by the Owner to stop the Work pursuant to Section 17.1 where the Contractor was not at fault, the Contractor shall give the Owner written notice thereof within seven (7) days after the occurrence of the event giving rise to such claim, otherwise it shall be waived. Such notice shall be given by the Contractor before proceeding to execute the work involved, except in an emergency endangering life or property in which case the Contractor shall proceed in accordance with Section 11.3. A written report by the Contractor setting forth the facts and reasons for proceeding under Section 11.3 shall be submitted by it in support of its claim for relief under Section 11.3. No such claim for an increase in the Contract Sum or any other matter described above shall be valid unless so made. If the Owner and the Contractor cannot agree on the amount of the adjustment, if any, to the Contract Sum or the Contract Time, it shall be determined by the Architect, subject to the provisions of Article 19.

13.4.2 The Contractor understands that no director, member, trustee, officer, principal, employee, agent or other representative of the Owner, the OPM or the Architect has authority to waive compliance with the notice provisions of this Section 13.4.

13.4.3 The Contractor shall maintain a current listing of unresolved claims under this Section 13.4 and under Section 9.4

13.5 PENALTIES FOR FALSE CLAIMS

13.5.1 The attention of the Contractor and all Subcontractors is drawn to the following provisions of the Massachusetts General Laws:

(a) Chapter 93, Section 9B: Any person who shall make or cause to be made, or present or cause to be presented, for payment or approval, to or by any employee, department, agency, or public instrumentality of the commonwealth, or any political subdivision thereof, any claim upon or against any department, agency, public instrumentality of the commonwealth, or any political subdivision thereof, knowing such claim to be false, fictitious or fraudulent, or who, for the purpose of obtaining or aiding to obtain the payment or approval of such claim, makes, uses, or causes to be made or used, any false bill, receipt, voucher, roll, account, claim, certificate, affidavit, or deposition, knowing the same to contain any fraudulent or fictitious statement or entry, shall forfeit and pay to the commonwealth, or any political subdivision thereof, the sum of two thousand dollars and, in addition double the amount of damages which the commonwealth or political subdivision thereof may have sustained by reason of the doing or committing of such act, together with the costs of the action. Any such action may be brought in the superior court of the county in which the person resides or has his principal place of business, or in the superior court department of the trial court for Suffolk County.

(b) Whoever makes or presents to any employee, department, agency or public instrumentality of the commonwealth, or of any political subdivision thereof, any claim upon or against any department, agency, or public instrumentality of the commonwealth, or any political subdivision thereof, knowing such claim to be false, fictitious, or fraudulent, shall be punished by a fine of not more than ten thousand dollars or by imprisonment in the state prison for not more than five years, or in the house of correction for not more than two and one-half years, or both.

13.5.2 The Contractor's attention is also directed to M.G.L. c. 266, § 67B which provides criminal penalties for false claims by Contractor under this Contract: "Whoever makes or presents to any employee, department, agency or public instrumentality of the commonwealth, or of any political subdivision thereof, any claim upon or against any department, agency, or public instrumentality of the commonwealth, or any political subdivision thereof, knowing such claim to be false, fictitious, or fraudulent, shall be punished by a fine of not more than ten thousand dollars or by imprisonment in the state prison for not more than five years, or in the house of correction for not more than two and one-half years, or both."

13.6 MINOR CHANGES IN THE WORK

13.6.1 The Architect will have authority to order minor Changes in the Work not involving an adjustment in the Contract Sum or an adjustment of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written Architect's Supplemental Instructions, and shall be binding on the Owner and the Contractor. The Contractor shall carry out such Architect's Supplemental Instructions promptly.

ARTICLE 14 CORRECTION OF WORK

14.1 UNCOVERING OF WORK

14.1.1 If any portion of the Work should be covered contrary to the request of the Architect or the OPM or contrary to requirements specifically expressed in the Contract Documents, it must, if required in writing by the Architect, the OPM, or the Owner, be uncovered for observation by the Architect and replaced at the Contractor's expense.

14.1.2 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 through the OPM, may request to see such Work and it shall be uncovered by the Contractor. If such Work be found in accordance with the Contract Documents, the cost of uncovering and replacement shall, by appropriate Change Order, be charged to the Owner. If such Work be found not in accordance with the Contract Documents, the Contractor shall pay such costs unless it be found that this condition was caused by the Owner or a separate contractor as provided in Article 7, in which event the Owner shall be responsible for the payment of such costs.

14.2 CORRECTION OF WORK

14.2.1 The Contractor shall promptly correct all Work rejected by the Architect or the Owner as defective or as failing to conform to the Contract Documents, whether observed before or after Substantial Completion or Final 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.

14.2.2 Without limiting any other rights which the Owner has hereunder or pursuant to law, if, within one (1) year after the date of Substantial Completion of the Work or portion thereof designated by the Owner or within one year after acceptance by the Owner of designated equipment or within such longer period of time as may be prescribed by law or by the terms of any applicable guarantee or warranty required by or referred to in the Contract Documents (the "Guarantee Period"), any of the Work is found to be defective or not in accordance with the Contract Documents, the Contractor shall correct such defective work promptly after receipt of a written notice from the Owner to do so and shall reimburse the Owner for any expenses it shall have incurred in inspecting or testing such portion of the Work. The obligations provided in this Section 14.2 shall survive termination of the Contract and the making of final payment hereunder and may be extended pursuant to the provisions of Subsection 18.1.4.

14.2.3 The Contractor shall remove from the Site all portions of the Work which are defective or nonconforming and which have not been corrected under Article 18 or Subsections 14.2.1 and 14.2.2, unless removal is specifically waived in writing by the Owner.

14.2.4 If the Contractor fails to correct defective or nonconforming Work as provided in Article 18 or Subsections 14.2.1 and 14.2.2, the Owner may correct it in accordance with Section 17.2.

14.2.5 If the Contractor does not proceed with the correction of such defective or nonconforming work within a reasonable period of time (fixed by the OPM or the Architect in writing) after receipt of a written notice from the OPM or the Architect to correct such Work, 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.

14.2.6 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.

14.2.7 Nothing contained in this Section 14.2 shall be construed to establish a period of limitation with respect to any other obligation which the Contractor might have under the Contract Documents, including Article 18 hereof, or under law. The establishment of the Guarantee Period of one year after the date of Substantial Completion or such longer period of time as may be prescribed by law or by the terms of any guarantee or warranty required by or referred to in 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 its 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 its obligations other than specifically to correct the Work.

14.3 ACCEPTANCE OF DEFECTIVE OR NONCONFORMING WORK

14.3.1 If the Owner prefers to accept defective or nonconforming Work, it 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.

ARTICLE 15 PARTIAL USE OR OCCUPANCY

15.1 OWNER'S RIGHT TO USE AND OCCUPY

15.1.1 The Owner shall have the right to use and occupy spaces, areas, systems and other portions of the Work prior to completion and acceptance of all the Work or of other portions of the Work, provided that in the opinion of the Architect such use or occupancy shall not interfere with the Contractor's operations nor delay it in completing the entire Work. If the Owner desires to exercise its right of partial occupancy and use under this Section 15.1, the Owner shall give, through the OPM, reasonable notice thereof to the Architect and the Contractor. If the Architect determines that the proposed use or occupancy would not interfere with the Contractor's operations or delay it in completing the entire Work, the Contractor shall cooperate with the Owner in providing basic services and facilities reasonably required for the proposed use or the health,

safety and comfort of the users or occupants and other parties lawfully present on or entering or leaving the Site such as heating, ventilating, cooling, water, lighting, power, fire protection, elevator and telephone services for the space or spaces to be occupied. If the equipment required to furnish such services is not entirely completed at the time the Owner desires to use or occupy the aforesaid space or spaces, the Contractor shall make every reasonable effort to complete the same as soon as possible so that the necessary equipment can be put into operation and use. Mutually acceptable arrangements shall be made between the Owner and the Contractor with regard to procedures, terms, and conditions governing the operation and maintenance of such services and facilities as may be utilized for the benefit of the Owner. The Owner will assume proportionate and reasonable responsibility for operation of systems, equipment and/or utilities required to provide such services, in part or in total, including proportionate and reasonable expenses of operation incidental thereto, and mutually acceptable arrangements shall be made as to guarantees and warranties affecting designated portions or elements of the Work associated therewith.

15.2 PARTIAL USE NOT ACCEPTANCE

15.2.1 The Owner's use or occupancy of such designated areas or portions of the Work prior to completion and acceptance of all or portions of the Work pursuant to Section 15.1 shall not constitute acceptance of systems, materials, or elements of the Work which are not in accordance with the requirements of the Contract Documents, nor relieve the Contractor from its obligation to complete the Work, or its responsibility for loss or damage due to or arising out of defects in, or malfunctioning of, systems, materials, equipment, or elements of the Work, nor from other unfulfilled obligations or responsibilities of the Contractor under the Contract. If, however, damage results to such designated areas or portions of the Work, in whole or in part, from any act of the Owner, then the Owner will assume its proportionate responsibility for such damage, to the extent that such damage is not covered by insurance provided in accordance with the terms of the Contract Documents.

15.3 NO CLAIM FOR DELAY

15.3.1 The Contractor shall make no claim for any adjustment to the Contract Sum or the Contract Time or for damages of any kind arising directly or indirectly out of the exercise by the Owner of the rights reserved under this Article 15.

ARTICLE 16 TERMINATION OF THE CONTRACT

16.1 TERMINATION BY THE CONTRACTOR

16.1.1 If the Owner has failed to make a progress payment properly due and payable to the Contractor, then the Contractor, if not in default hereunder, may give the Owner written notice of its intention to terminate the Contract and if, after thirty (30) days after the Owner's receipt of such notice, the default of the Owner shall not have been cured or action by the Owner to effect such cure shall not have been commenced within such thirty (30) day period and

diligently pursued, as the case may be, then the Contractor may terminate the Contract and recover from the Owner payment for all Work executed in accordance with the Contract Documents based on the percentage of the Work properly completed as determined by the Architect.

16.2 TERMINATION BY THE OWNER

16.2.1 If any one (1) or more of the following events set forth in clauses (i) through (xiii) hereof shall occur:

(i) a petition is filed by the Contractor, or against the Contractor with its consent, under any federal or state law concerning bankruptcy, reorganization, insolvency or relief from creditors; or

(ii) such a petition is filed against the Contractor without its consent; or

(iii) the Contractor becomes insolvent or is generally not paying its debts as they become due; or

(iv) the Contractor consents to the appointment of a receiver, trustee, liquidator, custodian or the like of the Contractor or of all or any substantial portion of its assets; or

(v) a receiver, trustee, liquidator, custodian or the like is appointed with respect to the Contractor or takes possession of all or any substantial portion of its assets; or

(vi) the Contractor makes an assignment for the benefit of creditors; or

(vii) there has been a material adverse change in the financial condition of the Contractor; or

(viii) the Contractor's bonding or surety company shall refuse to issue a labor or material payment or performance bond or other similar guarantee of performance with respect to the Project; or

(ix) due to the fault of the Contractor (and not due to causes beyond the Contractor's reasonable control): (a) the Work is unreasonably delayed or discontinued, or (b) the execution of the Work ceases for more than three (3) days, or (c) the Work is delayed so that, in the Owner's judgment, the Work cannot be completed on or prior to the expiration of the Contract Time;

(x) the Contractor defaults in its obligation to perform the Work in a skilled and expeditious manner or refuses or fails to supply sufficient labor, materials, equipment and facilities to assure the proper progress of the Work; or

(xi) the Contractor fails to make prompt payment to any Subcontractor(s);

(xii) the Contractor fails to comply with Applicable Laws; or

(xiii) the Contractor otherwise violates or fails to comply with any material provision of the Contract Documents;

then, in any such event, the Owner may, without prejudice to any other right or remedy, and after giving the Contractor seven (7) days written notice, terminate the Contract and the employment of the Contractor and hold the Contractor and its sureties liable in damages for breach of the Contract Documents, or may direct the Contractor to discontinue the Work or any designated portion thereof and take possession of the Site or any portion thereof and possession and use of any and all materials, equipment, tools, construction equipment and machinery thereon owned by the Contractor and may finish the Work or any portion thereof by whatever method it may deem expedient. In such case the Contractor shall not be entitled to receive any further payment until the Work is fully completed. The Owner shall not be liable for any depreciation, loss or damage to such materials, equipment or tools during such use thereof, nor thereafter prior to removal thereof by the Contractor after completion of the Work. The Owner may, at its option, require the Contractor's surety or sureties to complete the Work in accordance with the Contract Documents. If the Owner elects to terminate this Contract pursuant to the provisions of this Section and it is subsequently determined that none of the foregoing events have occurred, then such termination, at Owner's election, may be deemed a termination pursuant to Subsection 16.2.3.

16.2.2 When the Work is fully completed by the Owner, if the costs incurred by the Owner in finishing the Work, including the cost of any additional services of the Architect or others, when added to the payments made to the Contractor prior to termination, exceed the Contract Sum, the Contractor or its sureties shall pay the amount of such excess to the Owner, together with interest thereon from the date incurred by the Owner until paid by the Contractor at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston. If the sum of such costs and payments is less than the Contract Sum, the Contractor shall be paid for any costs, as certified by the Architect on the basis of its determination of "cost" under Subsection 13.1.8, incurred by the Contractor but not paid for prior to the termination, to the extent that such payment does not cause the total of payments to the Contractor when added to the cost of finishing the Work to exceed the Contract Sum. In case of such termination of the Contract pursuant to this Article 16, the Owner may, at its election, assume and become liable for obligations, commitments and unsettled claims that the Contractor has previously undertaken or incurred in good faith in connection with the Work. Without limiting the generality of the foregoing, the Owner shall have the right (but shall have no obligation) to assume and/or assign to a general contractor or construction manager or other third party who is qualified and has sufficient resources to complete the Work, the rights of the Contractor under its subcontracts with any or all Subcontractors. In the event of such assumption or assignment by the Owner, no such Subcontractor shall have any claim against the Owner or such third party for Work performed by such Subcontractor or other matters arising prior to termination of the Contract except as expressly provided by law, and the Owner or such third party, as the case may be, shall be liable only for obligations to the Subcontractor arising after such assumption. Should the Owner

so elect, the Contractor shall execute and deliver all such documents and take all such steps, including the legal assignment of its contractual rights, as the Owner may require, for the purpose of fully vesting in the Owner the rights and benefits of the Contractor under such subcontracts or other obligations or commitments. All payments due the Contractor hereunder shall be subject to a right of offset by the Owner for expenses and damages suffered by the Owner as a result of any default, acts or omissions of the Contractor.

16.2.3 Upon fifteen (15) days' written notice, the Owner shall have the right to terminate the Contract at any time and for any reason whether or not any of the events specified in Subsection 16.2.1 shall have occurred, and the Owner shall incur no liability to the Contractor or any other person by reason of such termination. In the event of such termination, the Owner shall pay to the Contractor a sum equivalent to the unpaid Contract Sum attributable to the percentage of Work completed, as determined by the Architect, pursuant to the Contract Documents and accepted by the Owner.

16.2.4 In the event of a termination of the Contract pursuant to this Article 16, the Owner and the Contractor shall forthwith return to the other all papers, materials and other properties of the other held by each for the purposes of execution and performance of the Contract Documents. In addition, each party will assist the other party in an orderly termination of this Contract.

ARTICLE 17 OWNER'S RIGHT TO STOP THE WORK AND TO CARRY OUT THE WORK

17.1 OWNER'S RIGHT TO STOP THE WORK

17.1.1 If, in the sole judgment of the Owner, the Contractor fails to commence to correct and diligently pursue the correction of defective work as required by Section 14.2 or fails to carry out the Work in accordance with the Contract Documents, the Owner may, by a written order through the OPM, and without prejudice to any other remedy the Owner may have, order the Contractor to stop the Work or any portion thereof, and the Contractor shall not thereafter incur any further cost or expense therefor without the Owner's prior written approval, until the cause for such order has been eliminated. Notwithstanding the foregoing, the 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.

17.2 OWNER'S RIGHT TO CARRY OUT THE WORK

17.2.1 If the Contractor fails to perform the Work diligently and in a timely manner or defaults or neglects to carry out the Work in accordance with the Contract Documents or otherwise fails to perform its obligations under the Contract Documents, the Owner may, without prejudice to any other remedy it may have, make good such deficiencies, provided, however, that the Owner shall not take any action to perform the Work or to make good such deficiencies, except in the event of an emergency, unless the Contractor shall have failed, within

seven (7) business days after receipt of written notice from the Owner of such failure, default or neglect, to commence corrective action and thereafter to promptly and diligently pursue the corrective action to completion. If the Owner undertakes to make good such deficiencies, the Owner may take possession of the Site or any portion thereof and possession and use of any and all materials, equipment, tools, construction equipment and machinery thereon owned by the Contractor in order to make good such deficiencies by whatever method it may deem expedient. The Owner shall not be liable for any depreciation, loss or damage to such materials, equipment or tools during such use thereof. Further, if the Owner undertakes to make good such deficiencies, 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 additional services of the Architect and others made necessary by such default, neglect or failure, and the Contract Sum shall be likewise reduced. If the payments then or thereafter due the Contractor are not sufficient to cover such amount, then, as provided in Subsection 16.2.2, the Contractor shall, within thirty (30) days of receipt of an invoice therefor, pay to the Owner the difference with interest thereon. Further, if the Contractor fails, within such seven (7) business day notice period, to commence corrective action and thereafter to promptly and diligently pursue correction of such deficiencies, or fails to carry out the Work in a timely manner in accordance with the Contract Documents, or if the Architect advises the Owner that the Project cannot reasonably be completed by the Contractor within the Contract Time, then, at the request of the Owner, the Contractor's surety shall promptly complete the Work in accordance with the terms of the Contract Documents.

ARTICLE 18 POST-COMPLETION WARRANTY AND CORRECTIVE WORK

18.1 CONTRACTOR'S WARRANTIES

18.1.1 In addition to the Contractor's obligations under Subsection 14.2.2 hereof, the Contractor guarantees and warrants to the Owner and the Architect that all materials and equipment furnished under the Contract Documents will be new and of recent manufacture unless otherwise expressly required or permitted by the Contract Documents, and that all Work will be of good quality, free from faults and defects and in conformance with the Contract Documents in all respects. All Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective or as failing to conform to the Contract Documents.

18.1.2 It is specifically agreed that the Contractor's warranties of materials, equipment and labor under this Article 18 and all other warranties, guarantees, responsibilities and liabilities of the Contractor under the Contract Documents or otherwise provided under law, shall apply to products and equipment, if any, furnished by the Owner as referred to in the Specifications and to the installation thereof by the Contractor or its Subcontractors under this Contract as fully as if such products and equipment had been purchased directly by the Contractor for incorporation in the Work. The Contractor acknowledges that it has received and approved all information and specifications for such Owner-furnished products and equipment sufficient so as to permit the Contractor to make this agreement. Such specifications for Owner-furnished products and

equipment shall be considered a part of the Contract Documents, and such Owner-furnished products and equipment, upon delivery to and acceptance by the Contractor, shall become part of the Work. The Owner shall assign to the Contractor all warranties of any materials or equipment furnished by the Owner and installed by the Contractor or its Subcontractors under the Contract. The Owner and the Contractor agree to cooperate as necessary to facilitate any claims under such warranties.

18.1.3 The Contractor shall obtain and preserve for the benefit of the Owner manufacturer's warranties on materials, fixtures and equipment incorporated into the Work, and the Contractor shall prepare and execute a written guarantee and warranty applicable to all phases of the Work in accordance with the provisions of this Article and all other applicable provisions of the Contract Documents pertaining to warranties and guarantees, and shall also secure and pass through to the Owner written guarantees and warranties prepared in a similar manner from each Subcontractor engaged in the performance of the Work and, prior to Substantial Completion, shall deliver complete sets of all such guarantees and warranties to the Architect for review and approval in accordance with Subsection 3.7.4.

18.1.4 In the event that any work is performed to correct, repair or remedy any portion of the Work pursuant to any warranty or guarantee provided under the Contract Documents or otherwise available to the Owner, all such work, and all materials, equipment, supplies, appliances, fixtures and specialty devices requiring replacement during any guarantee period specified in the Contract Documents, shall be subject to a supplementary guarantee and warranty extending the guarantee or warranty period to cover all such work and all such items for the full guarantee or warranty period specified, beginning as of the date of acceptance of each such replacement item or element of work.

18.1.5 The warranty and guarantee provisions of this Article 18 shall be in addition to and not in limitation of any other warranties, guarantees, or remedies allowed by law or the Contract Documents.

18.1.6 No additional charge shall be made by the Contractor or by any Subcontractor for attending meetings at the Site to diagnose problems or to instruct the Owner's personnel in the proper operation or maintenance of the Work, or for making initial or seasonal adjustments (not including normal maintenance) of mechanical systems or other movable work during the applicable guarantee or warranty period (as it may be extended with respect to certain items pursuant to Subsection 18.1.4). The Contractor shall provide such service promptly upon notice from the Owner. In case of emergency, service shall be provided as necessary to avoid loss or damage or to maintain normal use of the premises. The Contractor shall furnish to the Architect and to the Owner a list of names and telephone numbers, with a back-up name and telephone number, covering each area of potential emergency.

ARTICLE 19 DISPUTE RESOLUTION

19.1 GOVERNING LAW; VENUE

19.1.1 The Contract and all modifications, amendments, or alterations thereto, if any, shall be governed by the laws of the Commonwealth of Massachusetts. The Contractor, all Subcontractors, and other persons performing any part of the Work agree that each of them shall be subject to the jurisdiction of the courts of the Commonwealth of Massachusetts or the federal courts for the District of Massachusetts with respect to any actions or suits at law or in equity arising out of or related to the bidding, award or performance of the Contract, subject to the dispute resolution provisions set forth herein.

19.2 CLAIMS AND DISPUTES

19.2.1 All claims, disputes or other matters in controversy between the Contractor and the Owner relating to the execution and progress of the Work or the interpretation of the Contract Documents, and any claims, disputes, and other matters in question relating to whether the Contractor's performance of the Work complies with the Contract Documents, which cannot be resolved by agreement between them, shall be referred to the Architect in writing for initial determination, with a copy to the other party. The Architect shall afford both parties a reasonable opportunity to present written evidence in support of their respective positions. The Architect shall render its decision in writing to each of the parties within a reasonable time and in no event later than thirty (30) days after the receipt of submissions from the parties.

19.2.2 No such claim, dispute or other matter in question shall constitute grounds for the Contractor to delay progress of the Work, and the Contractor shall carry on the Work and maintain its progress during consideration of any such claim, dispute or other matter by the Architect. The decision of the Architect with respect to any and all such claims, disputes or other matters in question shall be final and conclusive, provided that any party having complied with the provisions of Subsection 19.2.3, below, may file an action in a court of competent jurisdiction challenging the decision of the Architect or otherwise seeking final resolution of the claim, dispute or other matter in question.

19.2.3 The decision of the Architect on any such claim, dispute or other matter in question shall be final and binding upon the Owner and the Contractor, unless the Owner or the Contractor gives written notice to the other and to the Architect of its objection to such decision within ten (10) days after receipt by such aggrieved party of the Architect's decision and commences an action challenging the Architect's decision in a court of competent jurisdiction within the time permitted by law. If either party fails to give notice of objection to the Architect's decision within such ten (10) day period, it shall be conclusively deemed to have waived its right to object to such decision. If the Architect renders a decision after court proceedings have been commenced, such decision may be entered as evidence but will not supersede any such proceedings unless the decision is acceptable to all parties concerned. Nothing contained in this Article 19 shall limit the Owner's right to damages for delays by the Contractor or any other rights or remedies of the Owner under the Contract Documents or otherwise available under applicable law.

19.2.4 Prior to commencing litigation as to any claim, dispute or other matter in controversy, the parties shall discuss the possibility of resolution of such claim, dispute or

controversy through non-binding mediation or other alternative dispute resolution methods. If the parties agree to mediation, the fees and expenses of the mediator shall be borne equally by the parties unless otherwise agreed.

19.2.5 Pursuant to M.G.L. c. 30, § 39J, notwithstanding any contrary provision of this Contract, no decision by the Owner or by the Architect on a dispute, whether of fact or of law, arising under the Contract shall 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.

ARTICLE 20 MISCELLANEOUS PROVISIONS

20.1 NOTICE

20.1.1 Whenever written notice is required or permitted pursuant to the Contract Documents, the same shall be deemed to have been properly given if in writing and delivered by hand in person or by registered or certified mail, postage prepaid, or express overnight courier service, return receipt requested; and, in the case of notices to the Owner, to the address set forth at the beginning of the Agreement and, in the case of notices to the OPM or the Architect, to the address set forth at the beginning of the Agreement, marked to the attention of the OPM or Architect, as the case may be, and, in the case of notices to the Contractor, to the Contractor's Project Executive or Project Manager, addressed to such person at the Contractor's mailing address set forth at the beginning of the Agreement or the Contractor's field office at the Site. Any of the persons or addresses specified above for notice purposes may be changed by notice given in the manner provided herein from the party concerned to each of the other parties. Written notice shall be deemed to be given on the day received, if delivered by hand in person; on the next business day after mailing if sent by express overnight courier service; and three (3) business days after mailing if sent by registered or certified mail.

20.2 CONTRACT DOCUMENTS

20.2.1 The Contract Documents form the comprise the entire Contract between the Owner and the Contractor, and supersede all prior negotiations, representations and agreements, whether written or oral. Subject to the provisions of Article 6, the Contractor may not assign its rights or obligations under all or any portion of the Contract Documents nor shall the Contractor assign any moneys due or to become due under the Contract Documents without the written consent of the Owner, which consent may be withheld or granted in its sole discretion. Any such assignment without the written consent of the Owner shall be void and the assignee in such case shall acquire no rights in the Contract or to receive any moneys. Nothing contained in the Contract Documents shall be construed to modify or affect in any way the rights and obligations of the Owner and the Architect under any contract or agreement between the Owner and the Architect.

20.2.2 The Contract shall be governed by the laws of the Commonwealth of Massachusetts. The Contractor, all Subcontractors, and other persons performing any part of the Work agree that each of them shall be subject to the jurisdiction of the courts of Suffolk County in the Commonwealth of Massachusetts or the federal courts for the District of Massachusetts with respect to any actions or suits at law or in equity arising out of or related to the bidding, award or performance of the Contract, and that any such actions or suits commenced by any of such parties shall be commenced in the courts or appropriate administrative tribunals of Suffolk County in the Commonwealth of Massachusetts or the federal courts for the District of Massachusetts and not otherwise.

20.3 RIGHTS AND REMEDIES

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

20.3.2 No action or failure to act by the Owner, OPM, Architect, 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.

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

20.4 DECISIONS AND INTERPRETATIONS

20.4.1 Pursuant to M.G.L. c. 39, § 39P, in every case in which this Contract requires the Owner, any official, the OPM, or the Architect 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 (30) days after the written submission for decision containing all information necessary in the judgment of the Architect to render such decision; but if such decision requires extended investigation and study, the Owner, the official, the OPM, or the Architect shall, within thirty (30) 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.

20.5 ANTI-BOYCOTT COVENANT

20.5.1 The Contractor warrants, represents and agrees that during the time the Contract is in effect, neither it nor any affiliated company, as hereafter defined, shall participate in

or cooperate with an international boycott, as defined in Section 999(b)(3) and (4) of the Internal Revenue Code of 1954, as amended, or shall engage in conduct declared to be unlawful by M.G.L. c. 151E, § 2. If there shall be a breach in the warranty, representation, and agreement contained in this Subsection, then without limiting such other rights as it may have, the Owner shall be entitled to rescind the Agreement. As used herein, an affiliated company shall be any business entity of which at least 51% of the ownership interests are directly or indirectly owned by the Contractor or by a person or persons or business entity or entities directly or indirectly owning at least 51% of the ownership interest of the Contractor, or which directly or indirectly owns at least 51% of the ownership interests of the Contractor. This provision is included in the Agreement pursuant to Commonwealth of Massachusetts Executive Order No. 130.

20.6 RIGHT OF AUDIT

20.6.1 Without limiting any of the Owner's other rights under the Contract Documents, the Governor of the Commonwealth of Massachusetts or his or her designee, the Secretary of Administration and Finance of the Commonwealth of Massachusetts, and the State Auditor or his or her 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 and all Subcontractors which pertain to the performance of the provisions and requirements of the Contract. This provision is included in the Contract pursuant to Commonwealth of Massachusetts Executive Order No. 195.

20.7 RECORD KEEPING AND REPORTING

20.7.1 The Contractor shall maintain at the Site or at such other location as shall be approved by the Owner, on a current basis, during the term of the Agreement and shall retain for a period of six (6) years after the date of Final Payment, records of all Subcontracts, material orders, Shop Drawings, Samples, and other Project-related documents and revisions thereto which arise out of the Contract, the Contract Documents or the Work, including, but not limited to, the following:

(a) A detailed daily log of all events occurring on the Site or connected with progress of the Project. Such log shall include a listing of the Contractor staffing, manpower by Subcontractors, relevant weather information and names and purpose of all visitors to the Site. Copies of such daily logs shall be distributed weekly to the OPM;

(b) Copies of the Project Schedule as more specifically set forth in Article 9 of these General Conditions, and Schedules of Values as more specifically set forth in Article 10 of these General Conditions, and all updates thereto to reflect current conditions;

(c) A set of as-built Drawings and Specifications which records all changes made during construction and actual as-built conditions in accordance with the requirements of the Contract Documents; and

(d) Correspondence, meeting notes and minutes, clarifications and interpretations of the Contract Documents issued by the Architect, progress reports, all other Project related documents.

20.7.2 The Contractor shall furnish to the Owner on a weekly basis, a Progress Report for the preceding week, in form and substance acceptable to the Owner, containing, without limitation, the following information:

(a) Project Schedule, updated against baseline;

(b) List and status of outstanding issues, claims or disputes, or information required from the Owner;

(c) Safety record report.

(d) Certified payroll reports; and

(e) Suggestions for solutions to outstanding issues and schedule delays.

20.7.3 The Contractor shall provide a system of Project monitoring and reporting. The Contractor shall assist the Owner in developing and implementing a Change Order control system. Such reports and other information shall be included in the weekly progress reports to be submitted to the Owner in accordance with the Contract Documents, and the provisions of Subsection 20.7.2 hereof.

20.7.4 The Contractor shall establish and implement procedures for preparing and/or reviewing and processing Requests for Information and/or clarifications and interpretations of the Contract Documents, Shop Drawings, Samples and other submittals, requests for Construction Change Directives, requests for Change Orders, proposals for substitutions, Payment Applications, as-built Drawings and maintenance of logs.

20.7.5 The Contractor shall check all materials, equipment and labor entering into the Work and shall keep such full and detailed accounts as may be necessary for proper accounting and financial management under the Contract, utilizing such procedures as shall be satisfactory to the Owner. The Owner shall, upon request, be afforded copies of, and access to, all of the Contractor's records, books, correspondence, subcontracts, instructions, drawings, estimates, budgets, receipts, invoices, vouchers, memoranda, breakdowns, accounting data, bid proposals, cost control information and any other documents relating to the Work, in a form acceptable to the Owner.

20.7.6 Without limitation of the foregoing, the Owner shall have the right, at any time and from time to time, upon notice to the Contractor, to monitor and audit the Contractor's books and records in connection with any aspect of the Agreement or the Contract Documents at the Contractor's offices at the Contractor's sole cost and expense. The Contractor shall facilitate any such audit by making necessary facilities available to the Owner and its representatives.

Further provisions concerning the Contractor's records and the Owner's right to audit such records are set forth in the General Conditions.

20.7.7 If any inspection of the Contractor's books, records or other documents reveals an overcharge with respect to the Contract Sum, the Contractor shall pay the Owner or, at the Owner's election, the Owner may reimburse itself by taking as a credit against future payments due the Contractor, an amount equal to the overcharge plus the administrative and auditing expenses incurred by the Owner in determining the existence and amount of the overcharge. Nothing contained in this provision is intended as a limitation of any other rights or remedies which may be available to the Owner, be they civil or criminal.

20.8 FINANCIAL RECORDS OF CONTRACTOR

20.8.1 The provisions of this Section 20.8 are included in this Contract pursuant to Massachusetts General Laws Chapter 30, § 39R:

(a) The Contractor shall make, and keep for at least six (6) years after final payment, books, records, and accounts which in reasonable detail accurately and fairly reflect the transactions and dispositions of the Contractor, and

(b) until the expiration of six years after final payment, the Office of Inspector General, and the Commissioner of Capital Asset Management and Maintenance shall have the right to examine any books, documents, papers or records of the Contractor or of its Subcontractor that directly pertain to, and involve transactions relating to, the Contractor or its Subcontractors, and

(c) the Contractor shall describe any change in the method of maintaining records or recording transactions which materially affect any statements filed with the Owner, including in its description the date of the change and reasons therefor, and shall accompany said description with a letter from the Contractor's independent certified public accountant approving or otherwise commenting on the changes, and

(d) the Contractor has filed a statement of management on internal accounting controls as set forth in Subsection 20.8.2 below prior to the execution of the Contract, and

(e) the Contractor has filed prior to the execution of the Contract and will continue to file annually, an audited financial statement for the most recent completed fiscal year as set forth in Subsection 20.8.4.

20.8.2 Every Contractor awarded a contract shall file with the Owner a statement of management as to whether the system of internal accounting controls of the Contractor and its subsidiaries reasonably assures that:

(a) transactions are executed in accordance with management's general and specific authorization;

(b) transactions are recorded as necessary

i. to permit preparation of financial statements in conformity with generally accepted accounting principles, and

ii. to maintain accountability for assets;

(c) access to assets is permitted only in accordance with management's general or specific authorization; and

(d) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action was taken with respect to any difference.

20.8.3 Every Contractor awarded a contract shall also file with the Owner a statement prepared and signed by an independent certified public accountant, stating that s/he has examined the statement of management on internal accounting controls, and expressing an opinion as to:

(a) whether the representations of management in response to this Section and Subsection 20.8.1 above 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 condition.

20.8.4 Every Contractor awarded a contract by the Commonwealth or by any political subdivision thereof shall annually file with Commissioner of Capital Asset Management and Maintenance during the term of the contract a financial statement prepared by an independent certified public accountant on the basis of an audit by such accountant. The final statement filed shall include the date of final payment. All statements shall be accompanied by an accountant's report. Such statements shall be made available to the Owner upon request.

20.8.5 Records and statements required to be made, kept or filed under the provisions of M.G.L. c. 30, § 39R shall not be public records as defined in M.G.L. c. 4, § 7, and shall not be open to public inspection; provided, however, that such records and statements shall be made available pursuant to the provisions of Subsection 20.8.1(b).

20.8.6 As used in this Section 20.8, the following terms have the meanings set forth below:

(a) "Contract" means any contract awarded or executed pursuant to sections thirty B through thirty P, inclusive, of chapter seven [now sections 38A½ through 38O] and any contract awarded or executed pursuant to section thirty-nine M of chapter thirty, or sections forty-four A through H, inclusive, of chapter one hundred and forty-nine, which is for an amount or estimated amount greater than one hundred thousand dollars.

(b) "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.

(c) "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/her residence or principal office and 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.

(d) "Audit", when used in regard to financial statements, means an examination of records by an independent certified public accountant in accordance with generally accepted 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.

(e) "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 s/he has made and sets forth his/her 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 reason 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 audited financial statement is a true and complete statement of the financial condition of the Contractor.

(f) "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.

20.9 FALSE ENTRY

20.9.1 The attention of the Contractor is called to M.G.L. c. 266, § 67C, which provides:

> Any person who knowingly and willfully, directly or indirectly makes, or knowingly and willfully causes to be made, a false entry or omission of a true entry in any books, record or account subject to the provisions of section thirty-nine R of chapter thirty shall be punished by a fine of not more than five thousand dollars, or by imprisonment in the state prison for not more than five years, or in the house of correction for not more than two years, or both.

END OF DOCUMENT

Rev. 11/2017

Document 00 7373 Statutory Requirements

STATUTORY PROVISIONS FOR MASSACHUSETTS PUBLIC CONSTRUCTION CONTRACTS

ARTICLE 1 - PAYMENT AND CONTRACT ADMINISTRATION

Paragraph	Subject	Statute or Executive Order
1.1	"Or Equal" Clause	M.G.L. c.30, §39M(b)
1.2	Delays	M.G.L. c.30, §390
1.3	Deviations	M.G.L. c.30, §39I
1.4	Finality of Decisions	M.G.L. c.30, §39J
1.5	Differing Site Conditions	M.G.L. c.30, §39N
1.6	Timely Decisions	M.G.L. c.30, §39P
1.7	Certificate of Appropriation	M.G.L. c.44, §31C
1.8	Method of Payment	M.G.L. c.30, §39K
1.9	Direct Payment	M.G.L. c.30, §39F

ARTICLE 2 - WAGES AND EMPLOYMENT PRACTICES

Paragraph	Subject	Statute or Executive Order
2.1	Preference to Veterans and Citizens; Rate of Wages	M.G.L. c.149, §26
2.2	Determination of Wage Rates	M.G.L. c.149, §27
2.3	Employment Records	M.G.L. c.149, §27B
2.4	Wages Paid to Operators of Trucks and Other Equipment	M.G.L. c.149, §27F
2.5	Reserve Officers	M.G.L. c.149, §34B
2.6	Eight-Hour Day	M.G.L. c.149, §§30 and 34
2.7	Lodging	M.G.L. c.149, §25
2.8	Access to Contractor's Records	Executive Order No. 195
2.9	Worker's Compensation Insurance	M.G.L. c.149, §34A

ARTICLE 3 - EQUAL EMPLOYMENT OPPORTUNITY, NON-DISCRIMINATION AND AFFIRMATIVE
ACTION PROGRAM, MBE/WBE PARTICIPATION

Paragraph	Subject	Statute or Executive Order
3.1	Compliance, Generally	M.G.L. c.151B, Executive Order No. 526
3.2	Non-Discrimination and Affirmative Action	M.G.L. c.151B, Executive Order No. 526
3.3	Liaison Committee, Reports and Records	M.G.L. c.151B, Executive Order No. 526
3.4	Sanctions	M.G.L. c.151B, Executive Order No. 526
3.5	MBE/WBE Participation	M.G.L. c.7, §4 Executive Order No. 390

ARTICLE 4 - CONTRACTOR'S ACCOUNTING METHOD REQUIREMENTS

Paragraph	Subject	Statute or Executive Order
4.1	Definitions	M.G.L. c.30, c.149 and c.7
4.2	Books, Records, and Accounts	M.G.L. c.30, c.149 and c.7
4.3	Management Statement	M.G.L. c.30, c.149 and c.7
4.4	CPA Examination Statement	M.G.L. c.30, c.149 and c.7
4.5	Annual Financial Statement	M.G.L. c.30, c.149 and c.7

ARTICLE 5 - MISCELLANEOUS STATUTES

Paragraph	Subject	Statute or Executive Order
5.1	Weather Protection	M.G.L. c.149, §44F (1)
5.2	Form for Sub-Contract	M.G.L. c.149, §44F
5.3	Foreign Corporation	M.G.L. c.30, §39 L
5.4	Shoring	M.G.L. c.149, §129A
5.5	Compliance with Tax Laws	M.G.L. c.62C, §49A

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 to as the "Commonwealth"). Any other provisions required 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 by statute, notwithstanding the fact that they are not provided for in the Contract Documents. In case of conflict between the provisions of these Statutory Provisions for Massachusetts Public Construction Contracts and other provisions in the Contract Documents, the provisions of these Statutory Provisions for Massachusetts Public Construction Contracts shall govern. In case of conflict between the provisions of these Statutory Provisions for Massachusetts Public Construction Contracts and the provisions of any applicable statute, the statutory provisions shall govern. Wherever the term "Awarding Authority" appears in this Document, it shall be understood to mean the Owner, as identified in the Agreement.

ARTICLE 1 - PAYMENT AND CONTRACT ADMINISTRATION

1.1 "Or Equal" Clause: (Statutory reference M.G.L. c.30, §39M (b)) This paragraph applies to every contract for the construction, reconstruction, alteration, remodeling or repair of any public work, or for the purchase of any material by the Commonwealth, or political subdivision thereof, or by 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. c.149, §§44A through 44H. The said §§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 of 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. c.149, §44A.

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 Architect:

(a) it is at least equal in quality, durability, appearance, strength and design;

(b) it performs at least equally the function imposed by the general design for the work;

(c) it conforms substantially, even with deviations, to the detailed requirements for the items as indicated by the specifications.

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 c.30, §39O) This paragraph applies to every contract subject to M.G.L. c.30, §39M and to every contract subject to c.149, §§44A through 44H.

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

(a) The awarding authority may order the Contractor in writing to suspend, delay, or interrupt all or any part of the work for such a 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 Contractor on such increase; and provided further, that the awarding authority shall not make any adjustment in the contract price under this provision for any suspension, delay, interruption or failure to act to the extent that such is due to any cause for which this contract provides for an equitable adjustment of the contract price under any other contract provisions.

(b) The 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 Contractor notified the awarding authority in writing of the act or failure to act involved in the claim.

In the event a suspension, delay, interruption or failure to act of the awarding authority increases the cost of performance to any Subcontractor, that Subcontractor shall have the same rights against the Contractor for payment for an increase in the cost of his performance as provisions (a) and (b) give the 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 Contractor or the Subcontractor may have against each other.

1.3 Deviations. (Statutory reference M.G.L. c.30, §39I) This Paragraph 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 herein. No willful and substantial deviation from said plans and specifications shall be made unless authorized in writing by the awarding authority or by the Engineer or Architect in charge of the work who is duly authorized by the awarding authority to approve such deviations. In order to avoid delays in the prosecution of the work required by such contract such deviation from the plans or specifications may be authorized by a written order of the awarding authority or such Engineer or Architect so authorized to approve such deviation. Within thirty days thereafter, such written order shall be confirmed by a certificate of the awarding authority stating: (1) If such deviation involves any substitution or elimination of materials, fixtures or equipment, the reasons why such materials, fixtures or equipment were included in the first instance and the reasons for substitution or elimination, and, if the deviation is of any other nature, the reasons for such deviation, giving justification therefor; (2) that the specified deviation does not materially injure the project as a whole; (3) that either the work substituted for the work specified is of the same cost and quality, or that an equitable adjustment has been agreed upon between the awarding authority and the Contractor and the amount in dollars of said adjustment; and (4) that the deviation is in the best interest of the awarding authority.

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

1.4 Finality of Decisions by Awarding Authority or Architect: (Statutory reference M.G.L. c.30, §39J) This paragraph 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, town, district, board, commission, or other public body, when the amount of the contract exceeds the amount stated in M.G.L. c.30, §39J.

Notwithstanding any contrary provision of this contract, no decision by the awarding authority or by the Architect on a dispute, whether of fact or of law, arising under said contract shall 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. c.30, §39N) This Paragraph applies to every contract subject to M.G.L. c.30, §39M and to every contract subject to M.G.L. c.149, §§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 awarding 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 ordinarily encountered and generally recognized as inherent in work of the character provided for in the plans and Contract Documents and are of such a nature as to cause an increase or decrease in the cost of performance of the work or a change in the construction methods required for the performance of the work which results in an increase or decrease in the cost of the work, the awarding 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. c.30, §39P) This Paragraph applies to every contract subject to M.G.L. c.30, §39M, and to every contract subject to M.G.L. c.149, §§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. c.44, §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. c.44, §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 this 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, 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 be 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 therefore; 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 this contract or in the amount of such order is available shall bar any defense by the awarding authority on the grounds of insufficient appropriation.

1.8 Method of Payment: (Statutory reference: M.G.L. c.30, §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 of the contract exceeds the amount stated in M.G.L. c.30, §39K.

1.8.1 Within fifteen days (twenty-four days in the case of the Commonwealth) 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 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, 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 the same in accordance with the provisions of Paragraph 1.9 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 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 1.9 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 1.9. 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 (twenty-four days in the case of the Commonwealth) 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 changes so made, but such changes or any requirements 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 filed subtrade and each sub-subtrade listed in sub-bid form as required by 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 M.G.L. c.30, §39K, 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 Direct Payment: (Statutory reference M.G.L. c.30, §39F) This Paragraph applies to every contract awarded pursuant to M.G.L. c.149, §§44A through 44H, and (with the exception of Subparagraph 1.9.9) to every contract awarded pursuant to M.G.L. c.30, §39M.

1.9.1 Forthwith after the Contractor receives payment on account of a periodic estimate,

the 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 Contractor.

1.9.2 Not later than the sixty-fifth day after each Subcontractor substantially completes his work in accordance with the plans and specifications, the entire balance due under the subcontract, less amounts retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, shall be due the Subcontractor; and the awarding authority shall pay that amount to the Contractor. The Contractor shall forthwith pay to the Subcontractor the full amount received from the awarding authority less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the Subcontractor by the Contractor.

1.9.3 Each payment made by the awarding authority to the Contractor pursuant to Subparagraphs 1.9.1 and 1.9.2 of this Paragraph 1.9 for the labor performed and the materials furnished by a Subcontractor shall be made to the Contractor for the account of that Subcontractor; and the awarding authority shall take reasonable steps to compel the 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 Contractor or which is to be included in a payment to the Contractor for payment to the Subcontractor as provided in Subparagraphs 1.9.1 and 1.9.2, the awarding authority shall act upon the demand as provided in this Paragraph 1.9.

1.9.4 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 Contractor, less any amount retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, the Subcontractor may demand direct payment of that balance from the awarding authority. The demand shall be by a sworn statement delivered to or sent by certified mail to the awarding authority, and a copy shall be delivered to or sent by certified mail to the 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 Contractor, the Contractor may reply to the demand. The reply shall be by a sworn statement delivered to or sent by certified mail to the awarding authority, and a copy shall be delivered to or sent by certified mail to the Subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the subcontract, including any amount due for extra labor and materials furnished to the Contractor and of the amount due for each claim made by the Contractor against the Subcontractor.

1.9.5 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 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

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 1.9.4. The awarding authority shall make further direct payments to the Subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in parts (i) and (ii) of this Subparagraph.

1.9.6 The awarding authority shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of Subparagraph 1.9.5 in an interest-bearing joint account in the names of the Contractor and the Subcontractor in a bank in Massachusetts selected by the awarding authority or agreed upon by the Contractor and the Subcontractor and shall notify the Contractor and the Subcontractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the amount in the account, including accrued interest, as provided in an agreement between the Contractor and the Subcontractor or as determined by decree of a court of competent jurisdiction.

1.9.7 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 1.9.6 shall be made out of amounts payable to the 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 Contractor and in the order of receipt of such demands from subcontractors. All direct payments shall discharge the obligation of the awarding authority to the Contractor to the extent of such payment.

1.9.8 The awarding authority shall deduct from payments to a Contractor amounts which, together with the deposits in interest-bearing accounts pursuant to Subparagraph 1.9.6, are sufficient to satisfy all unpaid balances of demands for direct payment received from Subcontractors. All such amounts shall be earmarked for such direct payments, and the Subcontractors shall have a right in such deductions prior to any claims against such amounts by creditors of the Contractor.

1.9.9 If the Subcontractor does not receive payment as provided in Subparagraph 1.9.1 or if the 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 the same when due less the deductions provided for in Subparagraph 1.9.1, the Subcontractor may demand direct payment by following the procedure in Subparagraph 1.9.4 and the 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 Contractor. Thereafter the awarding authority shall proceed as provided in Subparagraphs 1.9.5, 1.9.6, 1.9.7 and 1.9.8.

1.9.10 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. c.149, §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 1.9.6 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.

1.9.11 "Subcontractor" as used in this Paragraph 1.9, (i) for contracts awarded as provided in M.G.L. c.149, §§44A-44H, 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 Contractor, (ii) for contracts awarded as provided in M.G.L. c.30, §39M, paragraph (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, and (iii) for contracts with the Commonwealth not awarded as provided in M.G.L. c.149, §§44A-44H, inclusive, shall also mean a person contracting with the Contractor to supply materials used or employed in a public works project for a price in excess of the amount stated in M.G.L. c.30, §39F.

1.9.12 A 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 1.9.6 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 1.9.6 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 trail any petition filed as provided in this paragraph. M.G.L. c.231, §§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 M.G.L. c.231, §§59 and 59B and, upon motion of any party, shall advance for speedy trail 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 trail 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 1.9.5 and in Subparagraph 1.9.6.

1.9.13 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 Contractor, reduce by the amount of any deposit of a disputed amount by the awarding authority as provided in part (iii) of Subparagraph 1.9.5 and in Subparagraph 1.9.6 any amount held under a trustee writ or pursuant to a restraining order or injunction.

ARTICLE 2 - WAGES AND EMPLOYMENT PRACTICES

2.1 Preference To Veterans and Citizens In Public Work; Rate of Wages: (Statutory reference M.G.L. c.149, §26) This paragraph applies to every contract or subcontract for the construction of public works by the Commonwealth or by a county, town or district, or by persons contracting or subcontracting for such works.

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. c.4, §7, clause 43, and

who are qualified to perform the work to which the employment relates; 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 or district.

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 service of the 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 so established, the wages paid to mechanics and apprentices, 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 of a county, town 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.

2.1.3 It is the obligation of the Contractor to assure that the Contractor and all of its subcontractors comply with the requirements of the Massachusetts Prevailing Wage Law, MGL c. 149 §§26-27H. The Contractor shall be responsible for all loss, cost and damage suffered or incurred by the Owner as a result of any stop work order or other enforcement action taken by the Attorney General under the authority of MGL c.149, §27, and shall release, indemnify, hold harmless and defend the Owner, the Architect, their officers, employees and consultants, from and against all claims, actions, suits, fines, or administrative proceedings arising out of or related to the violation by the Contractor or any subcontractor of the said Prevailing Wage Law (or, in the case of the Contractor's defense obligation, the claimed violation thereof). Unless otherwise expressly provided in the Contract Documents, all payroll records required to be submitted to the Owner shall be delivered to a designated employee of the Owner, and not to the Architect.

2.2 List of Jobs; Classifications; Determination of Rate of Wages; Schedule: (Statutory reference M.G.L. c.149, §27) This paragraph applies to every contract or subcontract for the construction of public works by the Commonwealth, or by a county, town or district.

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. The Commissioner shall classify said jobs, and he may revise such classifications 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. 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 Paragraph 2.1 of these Supplementary General Conditions, 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 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 to be kept posted in a conspicuous place at the site of said works during the life of the contract. 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 Paragraph 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. Note: The awarding authority does not guarantee the accuracy of any schedule of wage rates furnished to the Contractor hereunder, and the Contractor shall be responsible for ascertaining the prevailing wages in the area where the work will be performed.

2.3 Employment Records to be Kept by Contractor, Subcontractors; Statement of Compliance: (Statutory reference M.G.L. c.149, §27B) This paragraph 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 2.2 of this Document applies, shall keep a true and accurate record 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 the hours worked by, and the wages paid to, each such employee, and shall 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. Such records shall be open to inspection by any authorized representative of the Department of Labor and Industries at any reasonable time, and as often as may be necessary. Every Contractor and Subcontractor require to keep such a record shall submit a copy of said record to the awarding authority directly 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 or by any authorized officer or employee of 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:

_____
(Contractor, Subcontractor, or public body)

on the _____ and that all
(building or project)

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 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 Commissioner for such inspection.

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

Prescribed rates of wages, as determined by the Commissioner, shall be paid to the operators of all trucks, vehicles or equipment employed on the Project. Said rates of wages shall be requested of said Commissioner by the awarding authority 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.

2.5 Reserve Police Officers: (Statutory reference M.G.L. c.149, §34B) This paragraph 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 wage paid to regular police officers in such city or town.

2.6 Eight-Hour Day: (Statutory reference M.G.L. c.149, §§30 and 34) This paragraph 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 emergency.

2.7 Lodging: (Statutory reference M.G.L. c.149, §25) This paragraph 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 applies to every contract for the purchase of services or materials by any agency, bureau, board, commission, institution, or department of 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. c.149, §34A) This paragraph 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 compensation and the furnishing of other benefits under M.G.L. c.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 the 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.

ARTICLE 3 - EQUAL EMPLOYMENT OPPORTUNITY, NON-DISCRIMINATION AND AFFIRMATIVE ACTION PROGRAM (M.G.L. c.151B, EXECUTIVE ORDER 478; GOALS FOR PARTICIPATION BY MINORITY BUSINESS ENTERPRISES AND WOMEN BUSINESS ENTERPRISES, M.G.L. c.7, §40N, and EXECUTIVE ORDER 524)

3.1 Compliance, General: For purpose of this Article, "minority" refers to Asians, Blacks, Western Hemisphere Hispanics, Native Americans, and Cape Verdeans; "Commission" refers to the Massachusetts Commission Against Discrimination. During the performance of this Contract, the Contractor and all of its Subcontractors (hereinafter collectively referred to as the Contractor) shall comply with all applicable equal employment opportunity, non-discrimination and affirmative action requirements, including but not limited to the following:

3.2 Non-Discrimination and Affirmative Action: The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religious creed, national origin, age, handicap, sexual orientation, or sex. The aforesaid provision shall include, but not be limited to, the following: employment upgrading, demotion or transfer; recruitment advertising;

recruitment layoff; termination; rates of pay or other forms of compensation; conditions or privileges of employment; and selection for apprenticeship. The Contractor shall comply with the provisions of M.G.L. c.151B and all other applicable anti-discrimination and equal opportunity laws.

3.2.1 The Contractor shall comply with the provisions of Executive Order 526, entitled Order Regarding Nondiscrimination, Diversity, Equal Opportunity and Affirmative Action, which prohibits unlawful discrimination based on race, color, age, gender, ethnicity, sexual orientation, religion, creed, ancestry, national origin, disability, veteran's status (including Vietnam-era veterans), or background. Executive Order 526 is herein incorporated by reference and made a part of this Contract.

3.2.2 Pursuant to Executive Order 526, the Contractor and any subcontractors may not engage in discriminatory employment practices; and the Contractor must certify that it is in compliance with all applicable federal and state laws, rules, and regulations governing fair labor and employment practices; and commit to purchasing supplies and services from certified minority or women-owned businesses, small businesses, or businesses owned by socially or economically disadvantaged persons or persons with disabilities. These provisions shall be enforced through the contracting agency, the Operational Services Division, and/or the Massachusetts Commission Against Discrimination. Any breach shall be regarded as a material breach of Contract that may subject Contractor to appropriate sanctions.

3.2.3 In connection with the performance of the Work, the Contractor shall undertake in good faith affirmative action measures designed to eliminate any discriminatory barriers in the terms and conditions of employment on the grounds of race, color, religious creed, national origin, age, sexual orientation, or sex, and to eliminate and remedy any effects of such discrimination in the past. Such affirmative action shall entail positive and aggressive measures to ensure equal opportunity in the areas of hiring, upgrading, demotion or transfer, recruitment, layoff or termination, rate of compensation, and in-service or apprenticeship training programs. This affirmative action shall include all action required to guarantee equal employment opportunity for all persons, regardless of race, color, religious creed, national origin, age, sexual orientation, or sex. A purpose of this provision is to ensure to the fullest extent possible an adequate supply of skilled tradesmen for future public construction projects.

3.2.4 If the Contractor shall use any subcontractor on any work performed under this Contract, the Contractor shall take affirmative steps to negotiate with qualified minority and women subcontractors. These affirmative steps shall cover both pre-bid and post-bid periods. It shall include notification to the State Supplier Diversity Office or its designee, while bids are in preparation, of all products, work or services for which the Contractor intends to negotiate bids. In all solicitations either by competitive bidding or negotiation made by the Contractor either for work to be performed under a subcontract or for the procurement of materials or equipment, each potential subcontractor or supplier shall be notified in writing by the Contractor of the Contractor's obligations under this Contract relative to non-discrimination and affirmative action.

3.2.5 As part of its obligation of remedial action under this Article, the Contractor shall maintain on this project not less than the percent ratio set forth in the Owner - Contractor Agreement of minority employee worker hours to total worker hours in each job category including but not limited to bricklayers, carpenters, cement masons, electricians, ironworkers, operating engineers, and those "classes of work" enumerated in M.G.L. c.149, §44F.

3.2.6 In the hiring of minority journeypersons, apprentices, trainees and advanced trainees,

the Contractor shall rely on referrals from a multi-employer affirmative action program approved by the Commission, traditional referral methods utilized by the construction industry, and referrals from agencies, not more than three in number at any one time, designated by the Liaison Committee or the Awarding Authority.

3.3 Liaison Committee, Reports and Records: At the option of the awarding authority, there may be established for the term of this Contract a body to be known as the Liaison Committee. The Liaison Committee shall be composed of one representative each from the awarding authority, the Commission and such other representatives as may be designated by the Commission in conjunction with the awarding authority. The Contractor (or his agent, if any, designated by him as the on-Site equal employment opportunity officer) shall recognize the Liaison Committee as an affirmative action body, and shall establish a continuing working relationship with the Liaison Committee, consulting with the Liaison Committee on all matters related to minority recruitment, referral, employment and training.

3.3.1 The Contractor shall prepare projected staffing tables on a quarterly basis. These shall be broken down into projections, by week, of workers required in each trade. Copies shall be furnished one week in advance of the commencement of the period covered, and also when updated, to the Awarding Authority and Liaison Committee. The Contractor shall prepare weekly reports in a form approved by the Awarding Authority of hours worked in each trade by each employee, identified as minority or non-minority. Copies of these shall be provided at the end of each such week to the Awarding Authority and to the Liaison Committee.

3.3.2 Records of employment referral orders, prepared by the Contractor, shall be made available to the Awarding Authority and to the Liaison Committee on request.

3.3.3 A designee of the Awarding Authority and a designee of the Liaison Committee shall each have right to access to the Site.

3.3.4 The Contractor shall comply with the provisions of M.G.L. c.151B as amended, of the Massachusetts General Laws, which is herein incorporated by reference and made a part of this Contract.

3.3.5 The Contractor shall provide all information and reports required by the Awarding Authority or the Commission on forms and in accordance with instructions issued by either of them and will permit access to its facilities and any books, records, accounts and other sources of information which may be determined by the Awarding Authority or the Commission to affect the employment of personnel. This provision shall apply only to information pertinent to the Owner 's supplementary affirmative action Contract requirements. Where information required is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to the Awarding Authority or the Commission as appropriate and shall set forth what efforts he has made to obtain the information.

3.4 Sanctions:

3.4.1 Whenever the Awarding Authority, the Commission, or the Liaison Committee believes the Contractor or any Subcontractor may not be operating in compliance with the terms of this Article, the Commission shall directly, or through its designated agent, conduct an appropriate investigation, and may confer with the parties, to determine if such Contractor is operating in compliance with the terms of this Article. If the Commission or its agent finds the Contractor or any Subcontractor not in compliance, it may make a preliminary report on non-compliance, and notify such Contractor in writing of such steps as will in the judgment of the Commission or its agent bring such Contractor into compliance. In the event that such Contractor fails or refuses to fully perform such steps, the Commission may make a final report of non-compliance, and recommend to the Awarding Authority the imposition of one or

more of the sanctions listed below. If, however, the Commission believes the Contractor or any Subcontractor has taken or is taking every possible measure to achieve compliance, it shall not make a final report of non-compliance. Within fourteen days of the receipt of the recommendations of the Commission, the Awarding Authority shall move to impose one or more of the following sanctions, as it may deem appropriate to attain full and effective enforcement:

(1) The recovery by the Awarding Authority from the Contractor of 1/100 of 1% of the Contract award amount or $1,000, whichever sum is greater, in the nature of liquidated damages or, if a Subcontractor is in non-compliance, the recovery by the Awarding Authority from the Contractor, to be assessed by the Contractor as a back-charge against the subcontractor, of 1/10 of 1% of the subcontract amount or $400, whichever sum is greater, in the nature of liquidated damages, for each week that such party fails or refuses to comply;

(2) The suspension of any payment or part thereof due under the Contract until such time as the Contractor or any subcontractor is able to demonstrate his compliance with the terms of the Contract;

(3) The termination, or cancellation, of the Contract, in whole or in part, unless the Contractor or any Subcontractor is able to demonstrate within a specified time his compliance with the terms of the contract;

(4) The denial to the Contractor or any subcontractor of the right to participate in any future contracts awarded by the Awarding Authority for a period of up to three years.

3.4.2 If at any time after the imposition of one or more of the above sanctions a Contractor is able to demonstrate that it is in compliance with this Article, the Contractor may request the Awarding Authority, in consultation with the Commission, to suspend the sanctions conditionally, pending a final determination by the Commission as to whether the Contractor is in compliance. Upon final determination of the Commission, the Awarding Authority, based on the recommendation of the Commission, shall either lift the sanctions or re-impose them.

3.4.3 Sanctions recommended by the Commission and enumerated under Section 3.4.1 above shall not be imposed by the Awarding Authority except after an adjudicatory proceeding, as that term is used in M.G.L. c.30A, has been conducted. No investigation by the Commission or its agent shall be initiated without prior notice to the Contractor.

3.4.4 Notwithstanding the provisions of subparagraphs 3.4.1 through 3.4.3 above, if the Awarding Authority determines after investigation that the Contractor or any Subcontractor is not in compliance with the terms of this Article, the Awarding Authority may suspend any payment or portion thereof due under the Contract until the Contractor demonstrates to the satisfaction of the Awarding Authority compliance with the terms of this Article. This temporary suspension of payments by the Awarding Authority is separate from the sanctions set forth in subparagraphs 3.4.1 through 3.4.3 of this Article, which are determined by MCAD and recommended to the Awarding Authority. Payment may be suspended only after the Contractor and any other interested party shall have been given the opportunity to present evidence in support of its position at an informal hearing held by the Awarding Authority, and the Awarding Authority has concluded upon review of all the evidence that such penalty is justified.

Payment shall not be suspended if the Awarding Authority finds that the Contractor made its best efforts to comply with this Article, or that some other justifiable reason exists for waiving the provisions of this Article in whole or in

part.

3.5 MBE/WBE Participation: The goals for minority business enterprise and woman business enterprise participation established for this Contract are as set forth in the Contract Documents. The Contractor and all Subcontractors, sub-subcontractors, and materials suppliers shall comply with requirements pertaining to MBE/WBE participation set forth in the Contract Documents in order to meet the MBE/WBE participation goals established for this Contract. Refer to Owner-Contractor Agreement for "MBE/WBE Participation Requirements" for additional information.

ARTICLE 4 - CONTRACTOR'S ACCOUNTING METHOD REQUIREMENTS

This Article 4 applies to "Contracts" and "Contractors" as defined in Subparagraphs 4.1.1 and 4.1.2 below. Statutory reference M.G.L. c.30, §39R.

4.1 Definitions: The words defined herein shall have the meaning stated below whenever they appear in this Article 4:

4.1.1 "Contractor" means any person, corporation, partnership, joint venture, sole proprietorship, or other entity awarded a contract pursuant to §39M of c.30, §§44A-44H, inclusive, of c.149, and §§30B-30P, inclusive of c.7.

4.1.2 “Contract” means any contract awarded or executed pursuant to §§30B-30P, inclusive of c.7, and any contract awarded or executed pursuant to §39M of c.30, or §§44A-44H, inclusive, of c.149, which is for an amount or estimated amount that exceeds the dollar amount set forth in M.G.L. c.30, §39R.

4.1.3 "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.

4.1.4 "Independent Certified Public Accountant" means a person duly registered in good standing and entitled to practice as a certified public account under laws of the place of his/her residence or principal office and 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.

4.1.5 "Audit", when used in regard to financial statements, means an examination of records by an independent certified public accountant in accordance with generally accepted 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.

4.1.6 "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 she/he has made and sets forth his/her 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 reason 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 audited financial statement is a true and complete statement of the financial condition of the Contractor.

4.1.7 "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.

4.1.8 Accounting terms, unless otherwise defined herein, shall have a meaning in accordance with generally accepted accounting principles and auditing standards.

4.2 Books, Records, and Accounts: Subparagraph 4.1.2. hereof notwithstanding, every agreement or contract awarded or executed pursuant to §§30B-30P, inclusive of c.7, and pursuant to §39M of c.30 or to §§44A-44H, inclusive, of c.149, shall provide that:

4.2.1 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.

4.2.2 Until the expiration of six years after final payment, the awarding authority, office of Inspector General, and the Deputy Commissioner of Capital Planning and Operations shall have the right to examine any books, documents, papers or records of the Contractor or of his/her Subcontractors that directly pertain to, and involve transactions relating to, the Contractor or his/her Subcontractors.

4.2.3 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/her 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.

4.2.4 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 4.3 below prior to the execution of the contract.

4.2.5 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 4.5 below.

4.3 Management Statement: 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:

4.3.1 transactions are executed in accordance with management's general and specific authorization;

4.3.2 transactions are recorded as necessary:
(i) to permit preparation of financial statements in conformity with generally accepted accounting principles, and
(ii) to maintain accountability for assets;

4.3.3 access to assets is permitted only in accordance with management's general or specific authorization; and

4.3.4 the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action was taken with respect to any difference.

4.4 CPA Examination Statement: 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 she/he has examined the statement of management on internal accounting controls, and expressing an opinion as to

4.4.1 whether the representations of management in response to this Paragraph and Paragraph 4.2 above are consistent with the result of management's evaluation of

the system of internal accounting controls; and

4.4.2 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.

4.5 Annual Financial Statement: Every Contractor awarded a contract by the Commonwealth or by any political subdivision thereof shall annually file with the Deputy Commissioner of Planning and Operations 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 5 - MISCELLANEOUS

5.1 Weather Protection: This paragraph applies to every contract subject to M.G.L. c.149 §44A.

The Contractor shall install weather protection and furnish adequate heat in the protected area from November 1 to March 31, as required by M.G.L. c.149, §44F (1).

5.2 Form for Sub-Contract: This paragraph applies to every contract subject to M.G.L. c.149, §44A.

The Contractor when sub-contracting with sub-bidders filed pursuant to M.G.L. c.149 §44F (4) (c) shall use the form of subcontract set forth in M.G.L. c.149, §44F.

5.3 Foreign Corporations: This paragraph 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.

The Contractor, if a foreign corporation, shall comply with M.G.L. c.30, §39L.

5.4 Shoring: (Statutory reference M.G.L. c.149, §129A) This paragraph applies to every construction project carried on by any city, town, country, or other subdivision of the Commonwealth in which a trench is to be dug to a depth of five feet or more, except for trenches 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.

Trenches shall be shored and braced in conformity with rules and regulations relating thereto adopted and enforced by the Department of Labor and Industries.

5.5 Certification of Compliance with Tax Law: (Statutory reference M.G.L. c.62C, §49A) This paragraph applies to contracts for goods or services furnished to 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.

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.

END OF DOCUMENT

Section 01 1000 Summary

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
1. Project information.
2. Work covered by Contract Documents.
3. Contractor's use of site and premises.
4. Work restrictions.
5. Specification and Drawing conventions.

B. Related Requirements:
1. Section 01 5000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 PROJECT INFORMATION

A. Project Identification: 548 Broadway HVAC repairs
1. Project Location: 548 Broadway, Everett, MA.

B. Owner:
1. City of Everett, 484 Broadway, Everett MA
a. Contact: Kiara Freeman
2. Owner's Representative or Owner’s Project Manager (OPM): Leftfield Project Management, 225 Franklin Street, Boston, MA
a. Contact: Steve Michener

C. Architect: Perkins Eastman, Inc., 20 Ashburton Place, Floor 8, Boston, MA 02108.
1. Contact: Daniel T. Colli, AIA

1.4 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and includes, but is not limited to, the following:
1. The project consists of the installation of ductwork thru-out the facility in order to deliver heat and fresh air thru-out the facility. The Units will be procured by the city, the contract includes electrical sub-panel work and final setting, connections and programming of the units.

Document 00 7343 Wage Rate Requirements

1.1 APPLICABLE LAWS

A. Provisions of the Contract Documents shall be subject to applicable provisions of law, including, without limitation, the Commonwealth of Massachusetts statutes relating to prevailing wages, record keeping and reporting.
   1. All applicable provisions of law are a part of this Contract.
   2. Incorrect citations of statutes in this Document shall not relieve Contractor of its obligations under law. In case of a conflict between the Contract Documents and applicable statutes, the provisions of law shall govern.

1.2 WAGE RATES

A. Wage Rates: The minimum rates of wages to be paid to mechanics and apprentices, chauffeurs, teamsters and laborers shall be set forth in the schedule of rates and wages determined by the Massachusetts Department of Labor and Workforce Development, which schedule is appended to this Document and made a part of the Contract, in accordance with and subject to the provisions of M.G.L. Chapter 149, Section 26 and 27, as amended.
   1. The Wage Determination Schedule provided to the Architect and Awarding Authority by governmental authorities is included in the Project Manual. The Architect and Awarding Authority do not guarantee the accuracy of the schedule, and every bidder and contractor shall be responsible for ascertaining the prevailing wages in the area where the work will be performed.

B. Payment Insurance: In accordance with M.G.L. Chapter 149, Section 34A, the Contractor shall, before commencing performance of the Contract, provide by insurance for the payment of compensation and the furnishing of other benefits under M.G.L. Chapter 152 “Worker’s Compensation” 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.
   1. Sufficient proof of compliance with this Document must be furnished at the time of execution of this Contract.
   2. Failure to provide and continue in force such insurance as aforesaid shall be deemed a material breach of Contract and shall operate as an immediate termination thereof. The attention of the Contractor is directed to that portion of M.G.L. Chapter 149, Section 34A, which provides that whoever violates any of its provisions 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 Document 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.

C. Records: Every contractor and subcontractor working under the terms of any contract for the construction on this project shall file weekly payroll records with the Awarding Authority in the form described in M.G.L. Chapter 149, Sections 26 and 27B, and as amended by Section 174 of Chapter 110 of the Acts of 1993. A copy of the “Statement of Wage Rate Compliance Form” is included in the Project Manual.
   1. The Attorney General’s Office, after conducting an investigation and hearing, can order work halted on public works projects, if it finds prevailing wage violations.

2. Any delays and costs incurred by the Awarding Authority associated with a stop work order for prevailing wage violation will be borne solely by the General Contractor.

D. Statement of Compliance: The Contractor and each Subcontractor shall furnish to the Office of the Attorney General and to the Awarding Authority, within 15 days after completion of its portion of the work, fully completed and certified copies of a "Statement of Wage Rate Compliance" certifying compliance with wage and benefit provisions of M.G.L. Chapter 149, Sections 26 and 27, and as amended by Section 331 of Chapter 110 of the Acts of 1993. A copy of the "Statement of Wage Rate Compliance" form is included in the Project Manual.

END OF DOCUMENT

WEEKLY PAYROLL RECORDS REPORT
AND STATEMENT OF COMPLIANCE

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

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

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

STATEMENT OF COMPLIANCE

_____, 20_____

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

do hereby state:

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

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

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

Signature _____

Title _____

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:	Everett	**City/Town:**	EVERETT
Wage Request No:	20260916213419	**Job Location:**	548 Broadway, Everett, MA 02149
Description of Work:	install of 3 owner procured ground mounted HVAC units. Provide and install supply and return ductwork necessary to connect HVAC units to existing building ductwork. Provide and install electrical and gas connections.		
Contract Number:	MUN-27-41		

§§ 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 A	8/1/2026	$43.05	$15.91	$21.78	$0.00	$0.00	$80.74
	12/1/2026	$43.05	$15.91	$23.52	$0.00	$0.00	$82.48
(3 AXLE) DRIVER - EQUIPMENT TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE A	8/1/2026	$43.12	$15.91	$21.78	$0.00	$0.00	$80.81
	12/1/2026	$43.12	$15.91	$23.52	$0.00	$0.00	$82.55
(4 & 5 AXLE) DRIVER - EQUIPMENT TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE A	8/1/2026	$43.24	$15.91	$21.78	$0.00	$0.00	$80.93
	12/1/2026	$43.24	$15.91	$23.52	$0.00	$0.00	$82.67
ADS/SUBMERSIBLE PILOT PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 1) For apprentice rates see "Apprentice- PILE DRIVER"	1/1/2024	$117.16	$10.08	$11.62	$12.67	$0.00	$151.53
AIR TRACK OPERATOR LABORERS LABORERS - ZONE 1 For apprentice rates see "Apprentice- LABORER"	6/1/2026	$49.15	$10.90	$9.75	$9.65	$0.00	$79.45
	12/1/2026	$51.40	$10.90	$9.75	$9.65	$0.00	$81.70
	6/1/2027	$53.00	$10.90	$9.75	$9.65	$0.00	$83.30
	12/1/2027	$54.60	$10.90	$9.75	$9.65	$0.00	$84.90
	6/1/2028	$56.28	$10.90	$9.75	$9.65	$0.00	$86.58
	12/1/2028	$57.95	$10.90	$9.75	$9.65	$0.00	$88.25
AIR TRACK OPERATOR (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 1 (HEAVY & HIGHWAY) For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"	6/1/2026	$50.00	$10.90	$9.75	$9.65	$0.00	$80.30
	12/1/2026	$51.50	$10.90	$9.75	$9.65	$0.00	$81.80
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. HEAT & FROST INSULATORS LOCAL 6 HEAT & FROST INSULATORS LOCAL 6 (BOSTON)	12/1/2025	$44.80	$14.50	$4.30	$6.75	$0.00	$70.35
ASPHALT RAKER LABORERS LABORERS - ZONE 1 For apprentice rates see "Apprentice- LABORER"	6/1/2026	$49.40	$10.90	$9.75	$9.65	$0.00	$79.70
	12/1/2026	$50.90	$10.90	$9.75	$9.65	$0.00	$81.20
	6/1/2027	$52.50	$10.90	$9.75	$9.65	$0.00	$82.80
	12/1/2027	$54.10	$10.90	$9.75	$9.65	$0.00	$84.40
	6/1/2028	$55.78	$10.90	$9.75	$9.65	$0.00	$86.08
	12/1/2028	$57.45	$10.90	$9.75	$9.65	$0.00	$87.75
ASPHALT RAKER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 1 (HEAVY & HIGHWAY) For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"	6/1/2026	$49.50	$10.90	$9.75	$9.65	$0.00	$79.80
	12/1/2026	$51.00	$10.90	$9.75	$9.65	$0.00	$81.30
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4 For apprentice rates see "Apprentice- OPERATING ENGINEERS"	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
BACKHOE/FRONT-END LOADER	6/1/2026	$59.38	$17.05	$13.35	$3.25	$0.00	$93.03

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
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 LABORERS LABORERS - ZONE 1	6/1/2026	$49.40	$10.90	$9.75	$9.65	$0.00	$79.70
	12/1/2026	$50.90	$10.90	$9.75	$9.65	$0.00	$81.20
	6/1/2027	$52.50	$10.90	$9.75	$9.65	$0.00	$82.80
	12/1/2027	$54.10	$10.90	$9.75	$9.65	$0.00	$84.40
	6/1/2028	$55.78	$10.90	$9.75	$9.65	$0.00	$86.08
	12/1/2028	$57.45	$10.90	$9.75	$9.65	$0.00	$87.75
For apprentice rates see "Apprentice- LABORER"							
BLOCK PAVER, RAMMER / CURB SETTER LABORERS LABORERS - ZONE 1	6/1/2026	$49.15	$10.90	$9.75	$9.65	$0.00	$79.45
	12/1/2026	$51.40	$10.90	$9.75	$9.65	$0.00	$81.70
	6/1/2027	$53.00	$10.90	$9.75	$9.65	$0.00	$83.30
	12/1/2027	$54.60	$10.90	$9.75	$9.65	$0.00	$84.90
	6/1/2028	$56.28	$10.90	$9.75	$9.65	$0.00	$86.58
	12/1/2028	$57.95	$10.90	$9.75	$9.65	$0.00	$88.25
For apprentice rates see "Apprentice- LABORER"							
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 1 (HEAVY & HIGHWAY)	6/1/2026	$50.00	$10.90	$9.75	$9.65	$0.00	$80.30
	12/1/2026	$51.50	$10.90	$9.75	$9.65	$0.00	$81.80
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) BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 (BOSTON)	8/1/2026	$70.15	$12.84	$15.57	$8.02	$0.00	$106.58
	2/1/2027	$71.55	$12.84	$15.57	$8.02	$0.00	$107.98

Construction

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

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	$35.08	$12.84	$15.57	$8.02	$0.00	$71.51
2	60.00	$42.09	$12.84	$15.57	$8.02	$0.00	$78.52
3	70.00	$49.11	$12.84	$15.57	$8.02	$0.00	$85.54
4	80.00	$56.12	$12.84	$15.57	$8.02	$0.00	$92.55
5	90.00	$63.14	$12.84	$15.57	$8.02	$0.00	$99.57

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	$35.78	$12.84	$15.57	$8.02	$0.00	$72.21
2	60.00	$42.93	$12.84	$15.57	$8.02	$0.00	$79.36
3	70.00	$50.09	$12.84	$15.57	$8.02	$0.00	$86.52
4	80.00	$57.24	$12.84	$15.57	$8.02	$0.00	$93.67
5	90.00	$64.40	$12.84	$15.57	$8.02	$0.00	$100.83

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 1	6/1/2026	$49.40	$10.90	$9.75	$9.65	$0.00	$79.70
	12/1/2026	$50.90	$10.90	$9.75	$9.65	$0.00	$81.20
	6/1/2027	$52.50	$10.90	$9.75	$9.65	$0.00	$82.80
	12/1/2027	$54.10	$10.90	$9.75	$9.65	$0.00	$84.40
	6/1/2028	$55.78	$10.90	$9.75	$9.65	$0.00	$86.08
	12/1/2028	$57.45	$10.90	$9.75	$9.65	$0.00	$87.75
For apprentice rates see "Apprentice- LABORER"							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
CARPENTER	9/1/2026	$63.69	$10.58	$11.47	$8.50	$0.00	$94.24
CARPENTERS	3/1/2027	$65.19	$10.58	$11.47	$8.50	$0.00	$95.74
CARPENTERS -ZONE 1 (Metro Boston)							

Apprentice: CARPENTER

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$28.66	$11.08	$0.00	$1.73	$0.00	$41.47
2	45.00	$28.66	$11.08	$0.00	$1.73	$0.00	$41.47
3	55.00	$35.03	$11.08	$0.00	$3.40	$0.00	$49.51
4	55.00	$35.03	$11.08	$0.00	$3.40	$0.00	$49.51
5	70.00	$44.58	$11.08	$11.41	$5.10	$0.00	$72.17
6	70.00	$44.58	$11.08	$11.41	$5.10	$0.00	$72.17
7	80.00	$50.95	$11.08	$11.44	$6.80	$0.00	$80.27
8	80.00	$50.95	$11.08	$11.44	$6.80	$0.00	$80.27

Apprentice: CARPENTER

Effective Date: 3/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$29.34	$10.58	$0.00	$1.73	$0.00	$41.65
2	45.00	$29.34	$10.58	$0.00	$1.73	$0.00	$41.65
3	55.00	$35.85	$10.58	$0.00	$3.40	$0.00	$49.83
4	55.00	$35.85	$10.58	$0.00	$3.40	$0.00	$49.83
5	70.00	$45.63	$10.58	$11.41	$5.10	$0.00	$72.72
6	70.00	$45.63	$10.58	$11.41	$5.10	$0.00	$72.72
7	80.00	$52.15	$10.58	$11.44	$6.80	$0.00	$80.97
8	80.00	$52.15	$10.58	$11.44	$6.80	$0.00	$80.97

Apprentice to Journeyworker Ratio: 1:5

CARPENTER WOOD FRAME	10/1/2025	$32.59	$7.42	$4.47	$2.20	$0.00	$46.68
CARPENTERS	10/1/2026	$33.89	$7.42	$4.47	$2.20	$0.00	$47.98
CARPENTERS -ZONE 2 (Wood Frame)							

All Aspects of New Wood Frame Work

Apprentice: CARPENTER WOOD FRAME

Effective Date: 10/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$16.30	$7.42	$0.00	$0.00	$0.00	$23.72
2	50.00	$16.30	$7.42	$0.00	$0.00	$0.00	$23.72
3	55.00	$17.92	$7.42	$0.00	$2.00	$0.00	$27.34
4	55.00	$17.92	$7.42	$0.00	$2.20	$0.00	$27.54
5	70.00	$22.81	$7.42	$4.47	$2.20	$0.00	$36.90
6	70.00	$22.81	$7.42	$4.47	$2.20	$0.00	$36.90

Construction

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

Apprentice: CARPENTER WOOD FRAME

Effective Date: 10/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
7	80.00	$26.07	$7.42	$4.47	$2.20	$0.00	$40.16
8	80.00	$26.07	$7.42	$4.47	$2.20	$0.00	$40.16

Apprentice: CARPENTER WOOD FRAME

Effective Date: 10/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$16.95	$7.42	$0.00	$0.00	$0.00	$24.37
2	50.00	$16.95	$7.42	$0.00	$0.00	$0.00	$24.37
3	55.00	$18.64	$7.42	$0.00	$2.20	$0.00	$28.26
4	55.00	$18.64	$7.42	$0.00	$2.20	$0.00	$28.26
5	70.00	$23.72	$7.42	$4.47	$2.20	$0.00	$37.81
6	70.00	$23.72	$7.42	$4.47	$2.20	$0.00	$37.81
7	80.00	$27.11	$7.42	$4.47	$2.20	$0.00	$41.20
8	80.00	$27.11	$7.42	$4.47	$2.20	$0.00	$41.20

Apprentice to Journeyworker Ratio: 1:5

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

Construction

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

Apprentice: CEMENT MASONRY/PLASTERING

Effective Date: 1/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
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 1	6/1/2026	$49.40	$10.90	$9.75	$9.65	$0.00	$79.70
	12/1/2026	$50.90	$10.90	$9.75	$9.65	$0.00	$81.20
	6/1/2027	$52.50	$10.90	$9.75	$9.65	$0.00	$82.80
	12/1/2027	$54.10	$10.90	$9.75	$9.65	$0.00	$84.40
	6/1/2028	$55.78	$10.90	$9.75	$9.65	$0.00	$86.08
	12/1/2028	$57.45	$10.90	$9.75	$9.65	$0.00	$87.75
For apprentice rates see "Apprentice- LABORER"							
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$60.61	$17.05	$13.35	$3.25	$0.00	$94.26
	12/1/2026	$62.09	$17.05	$13.35	$3.25	$0.00	$95.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
COMPRESSOR OPERATOR 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"							
DELEADER (BRIDGE) PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 1	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	6/1/2026	$49.30	$10.90	$9.75	$9.65	$0.00	$79.60

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
LABORERS LABORERS - ZONE 1	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 1	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 1	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: CONCRETE CUTTER/SAWYER LABORERS LABORERS - ZONE 1	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 1	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 1	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"							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
DIVER PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 1)	8/1/2024	$78.11	$10.08	$11.62	$10.04	$0.00	$109.85
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 1)	8/1/2024	$55.79	$10.08	$11.62	$12.67	$0.00	$90.16
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 1)	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 1)	8/1/2024	$117.16	$10.08	$11.62	$12.67	$0.00	$151.53
For apprentice rates see "Apprentice- PILE DRIVER"							
DRAWBRIDGE OPERATOR (Construction) DRAWBRIDGE - SEIU LOCAL 888 DRAWBRIDGE - SEIU LOCAL 888	7/1/2020	$26.77	$6.67	$3.93	$0.00	$0.16	$37.53
ELECTRICIAN ELECTRICIANS LOCAL 103 ELECTRICIANS LOCAL 103	9/1/2026	$68.78	$13.00	$14.69	$9.00	$0.00	$105.47
	3/1/2027	$69.97	$13.00	$14.73	$9.00	$0.00	$106.70
	9/1/2027	$71.88	$13.00	$14.79	$9.00	$0.00	$108.67
	3/1/2028	$73.08	$13.00	$14.82	$9.00	$0.00	$109.90

Apprentice: ELECTRICIAN

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$27.51	$13.00	$0.83	$0.00	$0.00	$41.34
2	40.00	$27.51	$13.00	$0.83	$0.00	$0.00	$41.34
3	45.00	$30.95	$13.00	$13.56	$4.05	$0.00	$61.56
4	45.00	$30.95	$13.00	$13.56	$4.05	$0.00	$61.56
5	50.00	$34.39	$13.00	$13.66	$4.50	$0.00	$65.55
6	55.00	$37.83	$13.00	$13.76	$4.95	$0.00	$69.54
7	60.00	$41.27	$13.00	$13.87	$5.40	$0.00	$73.54
8	65.00	$44.71	$13.00	$13.97	$5.85	$0.00	$77.53
9	70.00	$48.15	$13.00	$14.07	$6.30	$0.00	$81.52
10	75.00	$51.59	$13.00	$14.18	$6.75	$0.00	$85.52

Apprentice: ELECTRICIAN

Effective Date: 3/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$27.99	$13.00	$0.84	$0.00	$0.00	$41.83

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
ELEVATOR CONSTRUCTOR ELEVATOR CONSTRUCTORS LOCAL 4	1/1/2026	$77.26	$16.38	$11.06	$10.70	$0.00	$115.40
ELEVATOR CONSTRUCTORS LOCAL 4	1/1/2027	$80.55	$16.48	$11.16	$11.00	$0.00	$119.19

Apprentice: ELECTRICIAN

Effective Date: 3/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
2	40.00	$27.99	$13.00	$0.84	$0.00	$0.00	$41.83
3	45.00	$31.49	$13.00	$13.57	$4.05	$0.00	$62.11
4	45.00	$31.49	$13.00	$13.57	$4.05	$0.00	$62.11
5	50.00	$34.99	$13.00	$13.68	$4.50	$0.00	$66.17
6	55.00	$38.48	$13.00	$13.78	$4.95	$0.00	$70.21
7	60.00	$41.98	$13.00	$13.89	$5.40	$0.00	$74.27
8	65.00	$45.48	$13.00	$13.99	$5.85	$0.00	$78.32
9	70.00	$48.98	$13.00	$14.10	$6.30	$0.00	$82.38
10	75.00	$52.48	$13.00	$14.20	$6.75	$0.00	$86.43

Apprentice Notes

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Apprentice to Journeyworker Ratio: 2:3

Apprentice: ELEVATOR CONSTRUCTOR

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$38.63	$0.00	$0.00	$0.00	$0.00	$38.63
2	55.00	$42.49	$16.38	$11.06	$10.70	$0.00	$80.63
3	65.00	$50.22	$16.38	$11.06	$10.70	$0.00	$88.36
4	70.00	$54.08	$16.38	$11.06	$10.70	$0.00	$92.22
5	80.00	$61.81	$16.38	$11.06	$10.70	$0.00	$99.95

Apprentice: ELEVATOR CONSTRUCTOR

Effective Date: 1/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$40.28	$0.00	$0.00	$0.00	$0.00	$40.28
2	55.00	$44.30	$16.48	$11.16	$11.00	$0.00	$82.94
3	65.00	$52.36	$16.48	$11.16	$11.00	$0.00	$91.00
4	70.00	$56.39	$16.48	$11.16	$11.00	$0.00	$95.03
5	80.00	$64.44	$16.48	$11.16	$11.00	$0.00	$103.08

Apprentice to Journeyworker Ratio: 1:1

ELEVATOR CONSTRUCTOR HELPER ELEVATOR CONSTRUCTORS LOCAL 4	1/1/2026	$54.08	$16.38	$11.06	$10.07	$0.00	$91.59
	1/1/2027	$56.39	$16.48	$11.16	$11.00	$0.00	$95.03

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
ELEVATOR CONSTRUCTORS LOCAL 4							
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"							
FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY)	6/1/2026	$49.50	$10.90	$9.75	$9.65	$0.00	$79.80
LABORERS LABORERS - ZONE 1 (HEAVY & HIGHWAY)	12/1/2026	$51.00	$10.90	$9.75	$9.65	$0.00	$81.30
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	9/1/2026	$68.78	$13.00	$14.69	$9.00	$0.00	$105.47
ELECTRICIANS LOCAL 103 ELECTRICIANS LOCAL 103	3/1/2027	$69.97	$13.00	$14.73	$9.00	$0.00	$106.70
	9/1/2027	$71.88	$13.00	$14.79	$9.00	$0.00	$108.67
	3/1/2028	$73.08	$13.00	$14.82	$9.00	$0.00	$109.90
For apprentice rates see "Apprentice- ELECTRICIAN"							
FIRE ALARM REPAIR / MAINTENANCE	9/1/2026	$55.02	$13.00	$14.28	$7.20	$0.00	$89.50
/ COMMISSIONING ELECTRICIANS LOCAL 103 ELECTRICIANS LOCAL 103	3/1/2027	$55.98	$13.00	$14.31	$7.20	$0.00	$90.49
	9/1/2027	$57.50	$13.00	$14.36	$7.20	$0.00	$92.06
	3/1/2028	$58.46	$13.00	$14.38	$7.20	$0.00	$93.04
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"							
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	$9.65	$0.00	$59.51
LABORERS LABORERS - ZONE 1 (HEAVY & HIGHWAY)	12/1/2026	$29.21	$10.90	$9.75	$9.65	$0.00	$59.51
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
FLOORCOVERER	9/1/2026	$60.74	$10.33	$11.47	$8.80	$0.00	$91.34
FLOORCOVERERS LOCAL 2168 FLOORCOVERERS LOCAL 2168 ZONE I	3/1/2027	$62.24	$10.33	$11.47	$8.80	$0.00	$92.84

Construction

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

Apprentice: FLOORCOVERER

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$27.33	$10.33	$0.00	$1.76	$0.00	$39.42
2	45.00	$27.33	$10.33	$0.00	$1.76	$0.00	$39.42
3	55.00	$33.41	$10.33	$0.00	$3.52	$0.00	$47.26
4	55.00	$33.41	$10.33	$0.00	$3.52	$0.00	$47.26
5	70.00	$42.52	$10.33	$11.47	$5.28	$0.00	$69.60
6	70.00	$42.52	$10.33	$11.47	$5.28	$0.00	$69.60
7	80.00	$48.59	$10.33	$11.47	$7.04	$0.00	$77.43
8	80.00	$48.59	$10.33	$11.47	$7.04	$0.00	$77.43

Apprentice: FLOORCOVERER

Effective Date: 3/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$28.01	$10.33	$0.00	$1.76	$0.00	$40.10
2	45.00	$28.01	$10.33	$0.00	$1.76	$0.00	$40.10
3	55.00	$34.23	$10.33	$0.00	$3.52	$0.00	$48.08
4	55.00	$34.23	$10.33	$0.00	$3.52	$0.00	$48.08
5	70.00	$43.57	$10.33	$11.47	$5.28	$0.00	$70.65
6	70.00	$43.57	$10.33	$11.47	$5.28	$0.00	$70.65
7	80.00	$49.79	$10.33	$11.47	$7.04	$0.00	$78.63
8	80.00	$49.79	$10.33	$11.47	$7.04	$0.00	$78.63

Apprentice Notes

Steps are 750 hrs.

Apprentice to Journeyworker Ratio: 1:1

FORK LIFT/CHERRY PICKER	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"							
GENERATOR/LIGHTING PLANT/HEATERS	6/1/2026	$37.63	$17.05	$13.35	$3.25	$0.00	$71.28
OPERATING ENGINEERS LOCAL 4	12/1/2026	$38.58	$17.05	$13.35	$3.25	$0.00	$72.23
OPERATING ENGINEERS LOCAL 4							
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)	1/1/2026	$54.85	$10.35	$12.00	$12.60	$0.00	$89.80
GLAZIERS LOCAL 35							
GLAZIERS LOCAL 35 (ZONE 1)							

Construction

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

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	$27.43	$10.35	$0.00	$0.00	$0.00	$37.78
2	55.00	$30.17	$10.35	$0.00	$6.88	$0.00	$47.40
3	60.00	$32.91	$10.35	$0.00	$7.50	$0.00	$50.76
4	65.00	$35.65	$10.35	$0.00	$8.13	$0.00	$54.13
5	70.00	$38.40	$10.35	$11.95	$8.75	$0.00	$69.45
6	75.00	$41.14	$10.35	$11.95	$9.38	$0.00	$72.82
7	80.00	$43.88	$10.35	$11.95	$10.00	$0.00	$76.18
8	90.00	$49.37	$10.35	$11.95	$11.25	$0.00	$82.92

Apprentice to Journeyworker Ratio: 1:1

HOISTING ENGINEER/CRANES/GRADALLS	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							

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

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
HVAC (DUCTWORK) SHEETMETAL WORKERS LOCAL 17 SHEETMETAL WORKERS LOCAL 17 - A	2/1/2026	$62.93	$14.91	$18.74	$9.53	$2.98	$109.09
For apprentice rates see "Apprentice- SHEET METAL WORKER"							
HVAC (ELECTRICAL CONTROLS) ELECTRICIANS LOCAL 103 ELECTRICIANS LOCAL 103	9/1/2026	$68.78	$13.00	$14.69	$9.00	$0.00	$105.47
	3/1/2027	$69.97	$13.00	$14.73	$9.00	$0.00	$106.70
	9/1/2027	$71.88	$13.00	$14.79	$9.00	$0.00	$108.67
	3/1/2028	$73.08	$13.00	$14.82	$9.00	$0.00	$109.90
For apprentice rates see "Apprentice- ELECTRICIAN"							
HVAC (TESTING AND BALANCING - AIR) SHEETMETAL WORKERS LOCAL 17 SHEETMETAL WORKERS LOCAL 17 - A	2/1/2026	$62.93	$14.91	$18.74	$9.53	$2.98	$109.09
For apprentice rates see "Apprentice- SHEET METAL WORKER"							
HVAC (TESTING AND BALANCING -WATER) PIPEFITTERS LOCAL 537 PIPEFITTERS LOCAL 537	9/1/2026	$71.71	$14.20	$14.25	$10.00	$0.00	$110.16
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"							
HVAC MECHANIC PIPEFITTERS LOCAL 537 PIPEFITTERS LOCAL 537	9/1/2026	$71.71	$14.20	$14.25	$10.00	$0.00	$110.16
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"							
HYDRAULIC DRILLS LABORERS LABORERS - ZONE 1	6/1/2026	$49.15	$10.90	$9.75	$9.65	$0.00	$79.45
	12/1/2026	$51.40	$10.90	$9.75	$9.65	$0.00	$81.70
	6/1/2027	$53.00	$10.90	$9.75	$9.65	$0.00	$83.30
	12/1/2027	$54.60	$10.90	$9.75	$9.65	$0.00	$84.90
	6/1/2028	$56.28	$10.90	$9.75	$9.65	$0.00	$86.58
	12/1/2028	$57.95	$10.90	$9.75	$9.65	$0.00	$88.25
For apprentice rates see "Apprentice- LABORER"							
HYDRAULIC DRILLS (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 1 (HEAVY & HIGHWAY)	6/1/2026	$50.00	$10.90	$9.75	$9.65	$0.00	$80.30
	12/1/2026	$51.50	$10.90	$9.75	$9.65	$0.00	$81.80
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
INSULATOR (PIPES & TANKS) HEAT & FROST INSULATORS LOCAL 6 HEAT & FROST INSULATORS LOCAL 6 (BOSTON)	9/1/2026	$59.02	$16.15	$11.46	$11.49	$0.00	$98.12

Apprentice: INSULATOR (PIPES & TANKS)

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$29.51	$16.15	$11.21	$5.75	$0.00	$62.62
2	60.00	$35.41	$16.15	$11.26	$6.89	$0.00	$69.71
3	70.00	$41.31	$16.15	$11.31	$8.04	$0.00	$76.81
4	80.00	$47.22	$16.15	$11.36	$9.19	$0.00	$83.92

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice to Journeyworker Ratio: 1:4							
IRONWORKER/WELDER IRONWORKERS LOCAL 7 IRONWORKERS LOCAL 7 (BOSTON AREA)	3/16/2026	$58.65	$9.25	$12.75	$15.00	$0.00	$95.65

Apprentice: IRONWORKER/WELDER

Effective Date: 3/16/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	70.00	$41.06	$9.25	$12.75	$5.00	$0.00	$68.06
2	80.00	$46.92	$9.25	$12.75	$5.00	$0.00	$73.92
3	90.00	$52.79	$9.25	$12.75	$5.00	$0.00	$79.79
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

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 1	6/1/2026	$49.40	$10.90	$9.75	$9.65	$0.00	$79.70
	12/1/2026	$50.90	$10.90	$9.75	$9.65	$0.00	$81.20
	6/1/2027	$52.50	$10.90	$9.75	$9.65	$0.00	$82.80
	12/1/2027	$54.10	$10.90	$9.75	$9.65	$0.00	$84.40
	6/1/2028	$55.78	$10.90	$9.75	$9.65	$0.00	$86.08
	12/1/2028	$57.45	$10.90	$9.75	$9.65	$0.00	$87.75
For apprentice rates see "Apprentice- LABORER"							
LABORER LABORERS LABORERS - ZONE 1	6/1/2026	$49.15	$10.90	$9.75	$9.65	$0.00	$79.45
	12/1/2026	$50.65	$10.90	$9.75	$9.65	$0.00	$80.95
	6/1/2027	$52.25	$10.90	$9.75	$9.65	$0.00	$82.55
	12/1/2027	$53.85	$10.90	$9.75	$9.65	$0.00	$84.15
	6/1/2028	$55.53	$10.90	$9.75	$9.65	$0.00	$85.83
	12/1/2028	$57.20	$10.90	$9.75	$9.65	$0.00	$87.50

Apprentice: LABORER

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$29.49	$10.90	$9.75	$9.65	$0.00	$59.79
2	70.00	$34.41	$10.90	$9.75	$9.65	$0.00	$64.71
3	80.00	$39.32	$10.90	$9.75	$9.65	$0.00	$69.62
4	90.00	$44.24	$10.90	$9.75	$9.65	$0.00	$74.54

Apprentice: LABORER

Effective Date: 12/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Construction

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

Apprentice: LABORER

Effective Date: 12/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$30.39	$10.90	$9.75	$9.65	$0.00	$60.69
2	70.00	$35.46	$10.90	$9.75	$9.65	$0.00	$65.76
3	80.00	$40.52	$10.90	$9.75	$9.65	$0.00	$70.82
4	90.00	$45.59	$10.90	$9.75	$9.65	$0.00	$75.89

Apprentice to Journeyworker Ratio: 1:5

LABORER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 1 (HEAVY & HIGHWAY)	6/1/2026	$49.25	$10.90	$9.75	$9.65	$0.00	$79.55
	12/1/2026	$50.75	$10.90	$9.75	$9.65	$0.00	$81.05

Apprentice: LABORER (HEAVY & HIGHWAY)

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$29.55	$10.90	$9.75	$9.65	$0.00	$59.85
2	70.00	$34.48	$10.90	$9.75	$9.65	$0.00	$64.78
3	80.00	$39.40	$10.90	$9.75	$9.65	$0.00	$69.70
4	90.00	$44.33	$10.90	$9.75	$9.65	$0.00	$74.63

Apprentice: LABORER (HEAVY & HIGHWAY)

Effective Date: 12/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$30.45	$10.90	$9.75	$9.65	$0.00	$60.75
2	70.00	$35.53	$10.90	$9.75	$9.65	$0.00	$65.83
3	80.00	$40.60	$10.90	$9.75	$9.65	$0.00	$70.90
4	90.00	$45.68	$10.90	$9.75	$9.65	$0.00	$75.98

Apprentice to Journeyworker Ratio: 1:5

LABORER: CARPENTER TENDER LABORERS LABORERS - ZONE 1	6/1/2026	$49.15	$10.90	$9.75	$9.65	$0.00	$79.45
	12/1/2026	$50.65	$10.90	$9.75	$9.65	$0.00	$80.95
	6/1/2027	$52.25	$10.90	$9.75	$9.65	$0.00	$82.55
	12/1/2027	$53.85	$10.90	$9.75	$9.65	$0.00	$84.15
	6/1/2028	$55.53	$10.90	$9.75	$9.65	$0.00	$85.83
	12/1/2028	$57.20	$10.90	$9.75	$9.65	$0.00	$87.50

For apprentice rates see "Apprentice- LABORER"

LABORER: CEMENT FINISHER TENDER LABORERS LABORERS - ZONE 1	6/1/2026	$49.15	$10.90	$9.75	$9.65	$0.00	$79.45
	12/1/2026	$50.65	$10.90	$9.75	$9.65	$0.00	$80.95
	6/1/2027	$52.25	$10.90	$9.75	$9.65	$0.00	$82.55
	12/1/2027	$53.85	$10.90	$9.75	$9.65	$0.00	$84.15
	6/1/2028	$55.53	$10.90	$9.75	$9.65	$0.00	$85.83

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	12/1/2028	$57.20	$10.90	$9.75	$9.65	$0.00	$87.50
For apprentice rates see "Apprentice- LABORER"							
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER LABORERS LABORERS - ZONE 1	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"							
LABORER: MASON TENDER LABORERS LABORERS - ZONE 1	6/1/2026	$49.40	$10.90	$9.75	$9.65	$0.00	$79.70
	12/1/2026	$50.90	$10.90	$9.75	$9.65	$0.00	$81.20
	6/1/2027	$52.50	$10.90	$9.75	$9.65	$0.00	$82.80
	12/1/2027	$54.10	$10.90	$9.75	$9.65	$0.00	$84.40
	6/1/2028	$55.78	$10.90	$9.75	$9.65	$0.00	$86.08
	12/1/2028	$57.45	$10.90	$9.75	$9.65	$0.00	$87.75
For apprentice rates see "Apprentice- LABORER"							
LABORER: MASON TENDER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 1 (HEAVY & HIGHWAY)	6/1/2026	$49.50	$10.90	$9.75	$9.65	$0.00	$79.80
	12/1/2026	$51.00	$10.90	$9.75	$9.65	$0.00	$81.30
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
LABORER: MULTI-TRADE TENDER LABORERS LABORERS - ZONE 1	6/1/2026	$49.15	$10.90	$9.75	$9.65	$0.00	$79.45
	12/1/2026	$50.65	$10.90	$9.75	$9.65	$0.00	$80.95
	6/1/2027	$52.25	$10.90	$9.75	$9.65	$0.00	$82.55
	12/1/2027	$53.85	$10.90	$9.75	$9.65	$0.00	$84.15
	6/1/2028	$55.53	$10.90	$9.75	$9.65	$0.00	$85.83
	12/1/2028	$57.20	$10.90	$9.75	$9.65	$0.00	$87.50
For apprentice rates see "Apprentice- LABORER"							
LABORER: TREE REMOVER LABORERS LABORERS - ZONE 1	6/1/2026	$49.15	$10.90	$9.75	$9.65	$0.00	$79.45
	12/1/2026	$50.65	$10.90	$9.75	$9.65	$0.00	$80.95
	6/1/2027	$52.25	$10.90	$9.75	$9.65	$0.00	$82.55
	12/1/2027	$53.85	$10.90	$9.75	$9.65	$0.00	$84.15
	6/1/2028	$55.53	$10.90	$9.75	$9.65	$0.00	$85.83
	12/1/2028	$57.20	$10.90	$9.75	$9.65	$0.00	$87.50
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 LABORERS LABORERS - ZONE 1	6/1/2026	$49.40	$10.90	$9.75	$9.65	$0.00	$79.70
	12/1/2026	$50.90	$10.90	$9.75	$9.65	$0.00	$81.20
	6/1/2027	$52.50	$10.90	$9.75	$9.65	$0.00	$82.80
	12/1/2027	$54.10	$10.90	$9.75	$9.65	$0.00	$84.40
	6/1/2028	$55.78	$10.90	$9.75	$9.65	$0.00	$86.08
	12/1/2028	$57.45	$10.90	$9.75	$9.65	$0.00	$87.75
For apprentice rates see "Apprentice- LABORER"							
LASER BEAM OPERATOR (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 1 (HEAVY & HIGHWAY)	6/1/2026	$49.50	$10.90	$9.75	$9.65	$0.00	$79.80
	12/1/2026	$51.00	$10.90	$9.75	$9.65	$0.00	$81.30

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
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	2/1/2027	$54.96	$12.84	$15.57	$5.78	$0.00	$89.15
BRICKLAYERS LOCAL 3 - MARBLE & TILE							

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

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

Construction

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

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
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 1) MILLWRIGHTS LOCAL 1121 MILLWRIGHTS LOCAL 1121 - Zone 1	1/5/2026	$52.47	$10.58	$11.47	$10.25	$0.00	$84.77

Apprentice: MILLWRIGHT (Zone 1)

Effective Date: 1/5/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	$28.86	$10.58	$0.00	$5.64	$0.00	$45.08
2	65.00	$34.11	$10.58	$0.00	$6.66	$0.00	$51.35
3	75.00	$39.35	$10.58	$11.47	$7.69	$0.00	$69.09
4	85.00	$44.60	$10.58	$11.47	$8.71	$0.00	$75.36

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 1	6/1/2026	$49.40	$10.90	$9.75	$9.65	$0.00	$79.70
	12/1/2026	$50.90	$10.90	$9.75	$9.65	$0.00	$81.20
	6/1/2027	$52.50	$10.90	$9.75	$9.65	$0.00	$82.80
	12/1/2027	$54.10	$10.90	$9.75	$9.65	$0.00	$84.40
	6/1/2028	$55.78	$10.90	$9.75	$9.65	$0.00	$86.08
	12/1/2028	$57.45	$10.90	$9.75	$9.65	$0.00	$87.75
For apprentice rates see "Apprentice- LABORER"							
OILER (OTHER THAN TRUCK CRANES,GRADALLS)	6/1/2026	$25.07	$17.05	$13.35	$3.25	$0.00	$58.72

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	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)	6/1/2026	$31.17	$17.05	$13.35	$3.25	$0.00	$64.82
OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	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	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"							
PAINTER (BRIDGES/TANKS) PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 1	1/1/2026	$59.56	$10.35	$12.00	$12.60	$0.00	$94.51

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) * * 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 1	1/1/2026	$56.25	$10.35	$12.00	$12.60	$0.00	$91.20

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	$28.13	$10.35	$0.00	$0.00	$0.00	$38.48
2	55.00	$30.94	$10.35	$0.00	$6.93	$0.00	$48.22
3	60.00	$33.75	$10.35	$0.00	$7.56	$0.00	$51.66
4	65.00	$36.56	$10.35	$0.00	$8.19	$0.00	$55.10
5	70.00	$39.38	$10.35	$12.00	$8.92	$0.00	$70.65
6	75.00	$42.19	$10.35	$12.00	$9.45	$0.00	$73.99
7	80.00	$45.00	$10.35	$12.00	$10.08	$0.00	$77.43

Construction

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

Apprentice: PAINTER (SPRAY OR SANDBLAST, NEW) *

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
8	90.00	$50.63	$10.35	$12.00	$11.34	$0.00	$84.32

Apprentice to Journeyworker Ratio: 1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT) PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 1	1/1/2026	$54.31	$10.35	$12.00	$12.60	$0.00	$89.26

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	$27.16	$10.35	$0.00	$0.00	$0.00	$37.51
2	55.00	$29.87	$10.35	$0.00	$6.93	$0.00	$47.15
3	60.00	$32.59	$10.35	$0.00	$7.56	$0.00	$50.50
4	65.00	$35.30	$10.35	$0.00	$8.19	$0.00	$53.84
5	70.00	$38.02	$10.35	$12.00	$8.82	$0.00	$69.19
6	75.00	$40.73	$10.35	$12.00	$9.45	$0.00	$72.53
7	80.00	$43.45	$10.35	$12.00	$10.08	$0.00	$75.88
8	90.00	$48.88	$10.35	$12.00	$11.34	$0.00	$82.57

Apprentice to Journeyworker Ratio: 1:1

PAINTER / TAPER (BRUSH, NEW) * * 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 1	1/1/2026	$54.85	$10.35	$12.00	$12.60	$0.00	$89.80

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	$27.43	$10.35	$0.00	$0.00	$0.00	$37.78
2	55.00	$30.17	$10.35	$0.00	$6.93	$0.00	$47.45
3	60.00	$32.91	$10.35	$0.00	$7.56	$0.00	$50.82
4	65.00	$35.65	$10.35	$0.00	$8.19	$0.00	$54.19
5	70.00	$38.40	$10.35	$12.00	$8.82	$0.00	$69.57
6	75.00	$41.14	$10.35	$12.00	$9.45	$0.00	$72.94
7	80.00	$43.88	$10.35	$12.00	$10.08	$0.00	$76.31
8	90.00	$49.37	$10.35	$12.00	$11.34	$0.00	$83.06

Apprentice to Journeyworker Ratio: 1:1

PAINTER / TAPER (BRUSH, REPAINT)	1/1/2026	$52.91	$10.35	$12.00	$12.60	$0.00	$87.86

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 1							

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	$26.46	$10.35	$0.00	$0.00	$0.00	$36.81
2	55.00	$29.10	$10.35	$0.00	$6.93	$0.00	$46.38
3	60.00	$31.75	$10.35	$0.00	$7.56	$0.00	$49.66
4	65.00	$34.39	$10.35	$0.00	$8.19	$0.00	$52.93
5	70.00	$37.04	$10.35	$12.00	$8.82	$0.00	$68.21
6	75.00	$39.68	$10.35	$12.00	$9.45	$0.00	$71.48
7	80.00	$42.33	$10.35	$12.00	$10.08	$0.00	$74.76
8	90.00	$47.62	$10.35	$12.00	$11.34	$0.00	$81.31

Apprentice to Journeyworker Ratio: 1:1

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY) LABORERS LABORERS - ZONE 1 (HEAVY & HIGHWAY)	6/1/2026	$49.25	$10.90	$9.75	$9.65	$0.00	$79.55
	12/1/2026	$50.75	$10.90	$9.75	$9.65	$0.00	$81.05
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
PANEL & PICKUP TRUCKS DRIVER TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE A	8/1/2026	$42.88	$15.91	$21.78	$0.00	$0.00	$80.57
	12/1/2026	$42.88	$15.91	$23.52	$0.00	$0.00	$82.31
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 1)	8/1/2024	$55.79	$10.08	$11.62	$12.67	$0.00	$90.16
For apprentice rates see "Apprentice- PILE DRIVER"							
PILE DRIVER PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 1)	8/1/2024	$55.79	$10.08	$11.62	$12.67	$0.00	$90.16

Apprentice: PILE DRIVER

Effective Date: 8/1/2024

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$25.11	$10.08	$0.00	$2.53	$0.00	$37.72
2	55.00	$30.68	$10.08	$0.00	$5.07	$0.00	$45.83
3	70.00	$39.05	$10.08	$11.62	$7.60	$0.00	$68.35
4	80.00	$44.63	$10.08	$11.62	$10.14	$0.00	$76.47

Apprentice to Journeyworker Ratio: 1:5

PIPEFITTER & STEAMFITTER PIPEFITTERS LOCAL 537 PIPEFITTERS LOCAL 537	9/1/2026	$71.71	$14.20	$14.25	$10.00	$0.00	$110.16

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: PIPEFITTER & STEAMFITTER							
Effective Date: 9/1/2026							

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$28.68	$14.20	$14.25	$10.00	$0.00	$67.13
2	45.00	$32.27	$14.20	$14.25	$10.00	$0.00	$70.72
3	60.00	$43.03	$14.20	$14.25	$10.00	$0.00	$81.48
4	70.00	$50.20	$14.20	$14.25	$10.00	$0.00	$88.65
5	80.00	$57.37	$14.20	$14.25	$10.00	$0.00	$95.82

Apprentice to Journeyworker Ratio: 1:3

PIPELAYER	6/1/2026	$49.40	$10.90	$9.75	$9.65	$0.00	$79.70
LABORERS	12/1/2026	$50.90	$10.90	$9.75	$9.65	$0.00	$81.20
LABORERS - ZONE 1	6/1/2027	$52.50	$10.90	$9.75	$9.65	$0.00	$82.80
	12/1/2027	$54.10	$10.90	$9.75	$9.65	$0.00	$84.40
	6/1/2028	$55.78	$10.90	$9.75	$9.65	$0.00	$86.08
	12/1/2028	$57.45	$10.90	$9.75	$9.65	$0.00	$87.75
For apprentice rates see "Apprentice- LABORER"							
PIPELAYER (HEAVY & HIGHWAY)	6/1/2026	$49.50	$10.90	$9.75	$9.65	$0.00	$79.80
LABORERS	12/1/2026	$51.00	$10.90	$9.75	$9.65	$0.00	$81.30
LABORERS - ZONE 1 (HEAVY & HIGHWAY)							
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
PLUMBERS & GASFITTERS	8/31/2026	$74.79	$15.32	$12.61	$8.00	$0.00	$110.72
PLUMBERS & GASFITTERS LOCAL 12	3/1/2027	$76.94	$15.32	$12.61	$8.00	$0.00	$112.87
PLUMBERS & GASFITTERS LOCAL 12	8/30/2027	$79.09	$15.32	$12.61	$8.00	$0.00	$115.02
	2/28/2028	$81.29	$15.32	$12.61	$8.00	$0.00	$117.22
	9/4/2028	$83.49	$15.32	$12.61	$8.00	$0.00	$119.42
	3/5/2029	$85.69	$15.32	$12.61	$8.00	$0.00	$121.62
	9/3/2029	$87.89	$15.32	$12.61	$8.00	$0.00	$123.82
	3/4/2030	$89.84	$15.32	$12.61	$8.00	$0.00	$125.77

Apprentice: PLUMBERS & GASFITTERS

Effective Date: 8/31/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	35.00	$26.18	$15.32	$4.61	$2.80	$0.00	$48.91
2	40.00	$29.92	$15.32	$5.22	$3.20	$0.00	$53.66
3	55.00	$41.13	$15.32	$7.07	$5.20	$0.00	$68.72
4	65.00	$48.61	$15.32	$8.30	$5.20	$0.00	$77.43
5	75.00	$56.09	$15.32	$9.53	$6.00	$0.00	$86.94

Construction

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

Apprentice: PLUMBERS & GASFITTERS

Effective Date: 3/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	35.00	$26.93	$15.32	$4.61	$2.80	$0.00	$49.66
2	40.00	$30.78	$15.32	$5.22	$3.20	$0.00	$54.52
3	55.00	$42.32	$15.32	$7.07	$4.40	$0.00	$69.11
4	65.00	$50.01	$15.32	$8.30	$5.20	$0.00	$78.83
5	75.00	$57.71	$15.32	$9.53	$6.00	$0.00	$88.56

Apprentice to Journeyworker Ratio: 1:2

PNEUMATIC CONTROLS (TEMP.) PIPEFITTERS LOCAL 537 PIPEFITTERS LOCAL 537	9/1/2026	$71.71	$14.20	$14.25	$10.00	$0.00	$110.16
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"							
PNEUMATIC DRILL/TOOL OPERATOR LABORERS LABORERS - ZONE 1	6/1/2026	$49.40	$10.90	$9.75	$9.65	$0.00	$79.70
	12/1/2026	$50.90	$10.90	$9.75	$9.65	$0.00	$81.20
	6/1/2027	$52.50	$10.90	$9.75	$9.65	$0.00	$82.80
	12/1/2027	$54.10	$10.90	$9.75	$9.65	$0.00	$84.40
	6/1/2028	$55.78	$10.90	$9.75	$9.65	$0.00	$86.08
	12/1/2028	$57.45	$10.90	$9.75	$9.65	$0.00	$87.75
For apprentice rates see "Apprentice- LABORER"							
PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 1 (HEAVY & HIGHWAY)	6/1/2026	$49.50	$10.90	$9.75	$9.65	$0.00	$79.80
	12/1/2026	$51.00	$10.90	$9.75	$9.65	$0.00	$81.30
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
POWDERMAN & BLASTER LABORERS LABORERS - ZONE 1	6/1/2026	$50.15	$10.90	$9.75	$9.65	$0.00	$80.45
	12/1/2026	$51.65	$10.90	$9.75	$9.65	$0.00	$81.95
	6/1/2027	$53.25	$10.90	$9.75	$9.65	$0.00	$83.55
	12/1/2027	$54.85	$10.90	$9.75	$9.65	$0.00	$85.15
	6/1/2028	$56.53	$10.90	$9.75	$9.65	$0.00	$86.83
	12/1/2028	$58.20	$10.90	$9.75	$9.65	$0.00	$88.50
For apprentice rates see "Apprentice- LABORER"							
POWDERMAN & BLASTER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 1 (HEAVY & HIGHWAY)	6/1/2026	$50.25	$10.90	$9.75	$9.65	$0.00	$80.55
	12/1/2026	$51.75	$10.90	$9.75	$9.65	$0.00	$82.05
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"							
PUMP OPERATOR (CONCRETE) 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"							
PUMP OPERATOR (DEWATERING, OTHER)	6/1/2026	$37.63	$17.05	$13.35	$3.25	$0.00	$71.28
OPERATING ENGINEERS LOCAL 4	12/1/2026	$38.58	$17.05	$13.35	$3.25	$0.00	$72.23
OPERATING ENGINEERS LOCAL 4							
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
READY MIX CONCRETE DRIVERS after 4/30/12	8/1/2022	$30.40	$11.91	$15.25	$0.00	$0.00	$57.56
(Drivers Hired After 4/30/2012)							
TEAMSTERS 25 (Metro) - Aggregate							
TEAMSTERS 25 (Metro) - Aggregate							
READY-MIX CONCRETE DRIVER	8/1/2022	$34.41	$11.91	$15.25	$0.00	$0.00	$61.57
TEAMSTERS 25 (Metro) - Aggregate							
TEAMSTERS 25 (Metro) - Aggregate							
RECLAIMERS	6/1/2026	$58.70	$17.05	$13.35	$3.25	$0.00	$92.35
OPERATING ENGINEERS LOCAL 4	12/1/2026	$60.14	$17.05	$13.35	$3.25	$0.00	$93.79
OPERATING ENGINEERS LOCAL 4							
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
RIDE-ON MOTORIZED BUGGY OPERATOR	6/1/2026	$49.40	$10.90	$9.75	$9.65	$0.00	$79.70
LABORERS	12/1/2026	$50.90	$10.90	$9.75	$9.65	$0.00	$81.20
LABORERS - ZONE 1	6/1/2027	$52.50	$10.90	$9.75	$9.65	$0.00	$82.80
	12/1/2027	$54.10	$10.90	$9.75	$9.65	$0.00	$84.40
	6/1/2028	$55.78	$10.90	$9.75	$9.65	$0.00	$86.08
	12/1/2028	$57.45	$10.90	$9.75	$9.65	$0.00	$87.75
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	12/1/2026	$60.14	$17.05	$13.35	$3.25	$0.00	$93.79
OPERATING ENGINEERS LOCAL 4							
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	2/1/2027	$57.00	$14.53	$12.67	$9.03	$0.00	$93.23
ROOFERS LOCAL 33	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

Construction

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

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

Effective Date: 8/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
5	0.00	$0.00	$14.53	$12.67	$9.03	$0.00	$36.23

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

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 17 SHEETMETAL WORKERS LOCAL 17 - A	2/1/2026	$62.93	$14.91	$18.74	$9.53	$2.98	$109.09

Apprentice: SHEETMETAL WORKER

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	42.00	$26.43	$14.91	$6.19	$0.00	$0.00	$47.53
2	42.00	$26.43	$14.91	$6.19	$0.00	$0.00	$47.53
3	47.00	$29.58	$14.91	$10.93	$1.25	$1.62	$58.29
4	47.00	$29.58	$14.91	$10.93	$1.25	$1.62	$58.29
5	52.00	$32.72	$14.91	$11.66	$1.50	$1.74	$62.53
6	52.00	$32.72	$14.91	$11.66	$1.75	$1.75	$62.79
7	60.00	$37.76	$14.91	$12.84	$2.00	$1.93	$69.44

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: SHEETMETAL WORKER							
Effective Date: 2/1/2026							
Step / Percent		**Apprentice Base Wage**					
8 / 65.00		$40.90	$14.91	$13.58	$2.25	$2.04	$73.68
9 / 75.00		$47.20	$14.91	$15.06	$2.75	$2.28	$82.20
10 / 85.00		$53.49	$14.91	$16.53	$2.75	$2.49	$90.17
Apprentice to Journeyworker Ratio: 1:4							
SPECIALIZED EARTH MOVING EQUIP < 35 TONS	8/1/2026	$43.34	$15.91	$21.78	$0.00	$0.00	$81.03
TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE A	12/1/2026	$43.34	$15.91	$23.52	$0.00	$0.00	$82.77
SPECIALIZED EARTH MOVING EQUIP > 35 TONS	8/1/2026	$43.63	$15.91	$21.78	$0.00	$0.00	$81.32
TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE A	12/1/2026	$43.63	$15.91	$23.52	$0.00	$0.00	$83.06
SPRINKLER FITTER SPRINKLER FITTERS LOCAL 550 SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1	1/1/2026	$72.05	$13.45	$7.45	$18.25	$0.00	$111.20
Apprentice: SPRINKLER FITTER							
Effective Date: 1/1/2026							
Step / Percent		**Apprentice Base Wage**					
1 / 35.00		$25.22	$13.45	$13.84	$0.00	$0.00	$52.51
2 / 40.00		$28.82	$13.45	$14.75	$0.00	$0.00	$57.02
3 / 45.00		$32.42	$13.45	$15.67	$0.00	$0.00	$61.54
4 / 50.00		$36.03	$13.45	$16.57	$0.00	$0.00	$66.05
5 / 55.00		$39.63	$13.45	$17.49	$0.00	$0.00	$70.57
6 / 60.00		$43.23	$13.45	$18.40	$0.00	$0.00	$75.08
7 / 65.00		$46.83	$13.45	$19.32	$0.00	$0.00	$79.60
8 / 70.00		$50.44	$13.45	$20.22	$0.00	$0.00	$84.11
9 / 75.00		$54.04	$13.45	$21.15	$0.00	$0.00	$88.64
10 / 80.00		$57.64	$13.45	$22.05	$0.00	$0.00	$93.14
Apprentice Notes							
Apprentice entered prior 9/30/10:							
Apprentice to Journeyworker Ratio: 1:3							
STEAM BOILER OPERATOR	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"							
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN	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

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
TELECOMMUNICATION TECHNICIAN TELECOMMUNICATION TECHNICIAN ELECTRICIANS LOCAL 103 ELECTRICIANS LOCAL 103	9/1/2026	$55.02	$13.00	$14.28	$7.20	$0.00	$89.50
	3/1/2027	$55.98	$13.00	$14.31	$7.20	$0.00	$90.49
	9/1/2027	$57.50	$13.00	$14.36	$7.20	$0.00	$92.06
	3/1/2028	$58.46	$13.00	$14.38	$7.20	$0.00	$93.04
For apprentice rates and ratios see "Apprentice- ELECTRICIAN"							

Apprentice: TELECOMMUNICATION TECHNICIAN

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$24.76	$13.00	$0.74	$0.00	$0.00	$38.50
2	45.00	$24.76	$13.00	$0.74	$0.00	$0.00	$38.50
3	50.00	$27.51	$13.00	$13.46	$3.60	$0.00	$57.57
4	50.00	$27.51	$13.00	$13.46	$3.60	$0.00	$57.57
5	55.00	$30.26	$13.00	$13.54	$3.96	$0.00	$60.76
6	60.00	$33.01	$13.00	$13.62	$4.32	$0.00	$63.95
7	65.00	$35.76	$13.00	$13.70	$4.68	$0.00	$67.14
8	70.00	$38.51	$13.00	$13.79	$5.04	$0.00	$70.34
9	75.00	$41.27	$13.00	$13.87	$5.40	$0.00	$73.54
10	80.00	$44.02	$13.00	$13.96	$5.76	$0.00	$76.74

Apprentice: TELECOMMUNICATION TECHNICIAN

Effective Date: 3/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$25.19	$13.00	$0.76	$0.00	$0.00	$38.95
2	45.00	$25.19	$13.00	$0.76	$0.00	$0.00	$38.95
3	50.00	$27.99	$13.00	$13.47	$3.60	$0.00	$58.06
4	50.00	$27.99	$13.00	$13.47	$3.60	$0.00	$58.06
5	55.00	$30.79	$13.00	$13.55	$3.96	$0.00	$61.30
6	60.00	$33.59	$13.00	$13.64	$4.32	$0.00	$64.55
7	65.00	$36.39	$13.00	$13.72	$4.68	$0.00	$67.79
8	70.00	$39.19	$13.00	$13.81	$5.04	$0.00	$71.04
9	75.00	$41.99	$13.00	$13.89	$5.40	$0.00	$74.28
10	80.00	$44.78	$13.00	$13.97	$5.76	$0.00	$77.51

Apprentice to Journeyworker Ratio: 1:1

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

Construction

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

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
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	6/1/2026	$53.25	$10.90	$9.75	$9.80	$0.00	$83.70
LABORERS LABORERS - FOUNDATION AND MARINE	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	6/1/2026	$49.37	$10.90	$9.75	$9.80	$0.00	$79.82
LABORERS LABORERS - FOUNDATION AND MARINE	12/1/2026	$50.87	$10.90	$9.75	$9.80	$0.00	$81.32
For apprentice rates see "Apprentice- LABORER"							
TEST BORING LABORER	6/1/2026	$49.25	$10.90	$9.75	$9.80	$0.00	$79.70
LABORERS LABORERS - FOUNDATION AND MARINE	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	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"							
TRAILERS FOR EARTH MOVING EQUIPMENT	8/1/2026	$43.92	$15.91	$21.78	$0.00	$0.00	$81.61
TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE A	12/1/2026	$43.92	$15.91	$23.52	$0.00	$0.00	$83.35
TUNNEL WORK - COMPRESSED AIR	6/1/2026	$61.48	$10.90	$9.75	$10.25	$0.00	$92.38
LABORERS LABORERS (COMPRESSED AIR)	12/1/2026	$62.98	$10.90	$9.75	$10.25	$0.00	$93.88
For apprentice rates see "Apprentice- LABORER"							

Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
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"							
VAC-HAUL TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE A	8/1/2026	$43.34	$15.91	$21.78	$0.00	$0.00	$81.03
	12/1/2026	$43.34	$15.91	$23.52	$0.00	$0.00	$82.77
WAGON DRILL OPERATOR LABORERS LABORERS - ZONE 1	6/1/2026	$49.40	$10.90	$9.75	$9.65	$0.00	$79.70
	12/1/2026	$50.90	$10.90	$9.75	$9.65	$0.00	$81.20
	6/1/2027	$52.50	$10.90	$9.75	$9.65	$0.00	$82.80
	12/1/2027	$54.10	$10.90	$9.75	$9.65	$0.00	$84.40
	6/1/2028	$55.78	$10.90	$9.75	$9.65	$0.00	$86.08
	12/1/2028	$57.45	$10.90	$9.75	$9.65	$0.00	$87.75
For apprentice rates see "Apprentice- LABORER"							
WAGON DRILL OPERATOR (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 1 (HEAVY & HIGHWAY)	6/1/2026	$49.50	$10.90	$9.75	$9.65	$0.00	$79.80
	12/1/2026	$51.00	$10.90	$9.75	$9.65	$0.00	$81.30
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
WASTE WATER PUMP OPERATOR 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"							
WATER METER INSTALLER PLUMBERS & GASFITTERS LOCAL 12 PLUMBERS & GASFITTERS LOCAL 12	8/31/2026	$74.79	$15.32	$12.61	$8.00	$0.00	$110.72
	3/1/2027	$76.94	$15.32	$12.61	$8.00	$0.00	$112.87
	8/30/2027	$79.09	$15.32	$12.61	$8.00	$0.00	$115.02
	2/2/2028	$81.29	$15.32	$12.61	$8.00	$0.00	$117.22
	9/4/2028	$83.49	$15.32	$12.61	$8.00	$0.00	$119.42
	3/5/2029	$85.69	$15.32	$12.61	$8.00	$0.00	$121.62
	9/3/2029	$87.89	$15.32	$12.61	$8.00	$0.00	$123.82
	3/4/2030	$89.84	$15.32	$12.61	$8.00	$0.00	$125.77
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"							

Outside Electrical

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
CABLE TECHNICIAN (Power Zone)	8/30/2026	$38.13	$11.00	$1.14	$1.00	$0.00	$51.27
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104	8/29/2027	$39.65	$11.25	$1.19	$1.00	$0.00	$53.09
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104							
For apprentice rates see "Apprentice- LINEMAN"							
CABLEMAN (Underground Ducts & Cables)	8/30/2026	$54.02	$11.00	$1.62	$11.14	$0.00	$77.78
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104	8/29/2027	$56.17	$11.25	$1.69	$11.57	$0.00	$80.68
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104							
For apprentice rates see "Apprentice- LINEMAN"							
DRIVER / GROUNDMAN CDL	8/30/2026	$44.49	$11.00	$1.33	$10.80	$0.00	$67.62
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104	8/29/2027	$46.26	$11.25	$1.39	$11.15	$0.00	$70.05
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104							
For apprentice rates see "Apprentice- LINEMAN"							
DRIVER / GROUNDMAN -Inexperienced (<2000 Hrs)	8/30/2026	$34.95	$11.00	$1.05	$1.00	$0.00	$48.00
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104	8/29/2027	$36.64	$11.25	$1.09	$1.00	$0.00	$49.98
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104							
For apprentice rates see "Apprentice- LINEMAN"							
EQUIPMENT OPERATOR (Class A CDL)	8/30/2026	$54.02	$11.00	$1.62	$15.22	$0.00	$81.86
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104	8/29/2027	$56.17	$11.25	$1.69	$15.65	$0.00	$84.76
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104							
For apprentice rates see "Apprentice- LINEMAN"							
EQUIPMENT OPERATOR (Class B CDL)	8/30/2026	$47.66	$11.00	$1.43	$11.65	$0.00	$71.74
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104	8/29/2027	$49.56	$11.25	$1.49	$12.03	$0.00	$74.33
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104							
For apprentice rates see "Apprentice- LINEMAN"							
GROUNDMAN	8/30/2026	$34.95	$11.00	$1.05	$1.00	$0.00	$48.00
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104	8/29/2027	$36.34	$11.25	$1.09	$1.00	$0.00	$49.68
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104							
For apprentice rates see "Apprentice- LINEMAN"							
GROUNDMAN -Inexperienced (<2000 Hrs.)	8/30/2026	$28.60	$11.00	$0.86	$1.00	$0.00	$41.46
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104	8/29/2027	$29.74	$11.25	$0.89	$1.00	$0.00	$42.88
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104							
For apprentice rates see "Apprentice- LINEMAN"							
JOURNEYMAN LINEMAN	8/30/2026	$63.55	$11.00	$1.91	$18.50	$0.00	$94.96
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104	8/29/2027	$66.08	$11.25	$1.98	$19.00	$0.00	$98.31
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104							

Apprentice: JOURNEYMAN LINEMAN

Effective Date: 8/30/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$38.13	$11.00	$1.14	$2.50	$0.00	$52.77
2	65.00	$41.31	$11.00	$1.24	$2.50	$0.00	$56.05
3	70.00	$44.49	$11.00	$1.33	$2.50	$0.00	$59.32
4	75.00	$47.66	$11.00	$1.43	$4.00	$0.00	$64.09

Outside Electrical

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

Apprentice: JOURNEYMAN LINEMAN

Effective Date: 8/30/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
5	80.00	$50.84	$11.00	$1.53	$4.00	$0.00	$67.37
6	85.00	$54.02	$11.00	$1.62	$4.00	$0.00	$70.64
7	90.00	$57.20	$11.00	$1.72	$6.00	$0.00	$75.92

Apprentice: JOURNEYMAN LINEMAN

Effective Date: 8/29/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$39.65	$11.25	$1.19	$2.50	$0.00	$54.59
2	65.00	$42.95	$11.25	$1.29	$2.50	$0.00	$57.99
3	70.00	$46.26	$11.25	$1.39	$2.50	$0.00	$61.40
4	75.00	$49.56	$11.25	$1.49	$4.00	$0.00	$66.30
5	80.00	$52.86	$11.25	$1.59	$4.00	$0.00	$69.70
6	85.00	$56.17	$11.25	$1.69	$4.00	$0.00	$73.11
7	90.00	$59.47	$11.25	$1.79	$6.00	$0.00	$78.51

Apprentice to Journeyworker Ratio: 1:2

TELEDATA CABLE SPLICER OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104	2/4/2019	$30.73	$4.70	$0.92	$2.25	$0.00	$38.60
TELEDATA LINEMAN/EQUIPMENT OPERATOR OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104	2/4/2019	$28.93	$4.70	$0.89	$2.25	$0.00	$36.77
TELEDATA WIREMAN/INSTALLER/TECHNICIAN OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104 OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104	2/4/2019	$28.93	$4.70	$0.89	$2.25	$0.00	$36.77

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.

B. Type of Contract:
1. Project will be constructed under a single prime contract with Filed Sub-Bids in accordance with requirements of Massachusetts General Laws (MGL) Chapter 149.

2. Pre-Qualification Requirements for Filed Sub-Bidders: Pre-qualification is not required.

1.5 WORK UNDER OTHER CONTRACTS

A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract. Coordinate the Work of this Contract with work performed under separate contracts.

B. Preceding Work: Procurement of AHU's under separate contract – units will be delivered to site only, Units shall be uncrated and set in place under the work of this contract.

C. Concurrent Work: None

1.6 CONTRACTOR'S USE OF SITE AND PREMISES

A. Restricted Use of Site: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of Section 01 1145 "Owner Occupancy Requirements."
1. Driveways, Walkways and Entrances: Keep driveways, loading areas, and entrances serving the premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. The contractor may use the parking area off Linden Street for lay down, hoisting and general parking. Area shown in Red below.

a. Schedule deliveries to minimize impact to local Broadway traffic and the surrounding neighborhoods during AM and PM rush hours.

B. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.7 WORK SEQUENCE

A. General: The Contractor's attention is directed toward the critical activities and limitations listed in this Article to highlight unusual conditions present in this Project.
   1. The Contractor shall be responsible for scheduling the Work accordingly, and in conformance with requirements of all other specifications for the Project.
   2. Sequencing requirements shall be clearly identified on all construction schedules required under Section 013200 – CONSTRUCTION PROGRESS DOCUMENTATION.

B. Critical Submittals:
   1. Ductwork, Coordination Drawings

C. Weather Protection: The Contractor's attention is directed to the fact that extensive weatherproofing will be required to protect interior and exterior construction during the period the building is without a roof. Particular care is required, due to the Owner's intent to preserve the historic fabric of the building. For additional requirements, refer to Section 015000 – TEMPORARY FACILITIES AND CONTROLS.

D. Air Barrier: Schedule the installation of materials comprising the exterior envelope to minimize exposure of construction materials to damage by ultraviolet light, wind and weather. Notify the Architect prior to concealment of air barrier, to permit inspection and testing. Refer to Section 014000 – QUALITY REQUIREMENTS, and individual technical specification sections for specific requirements.

1.8 PERMITS, INSPECTION AND TESTING REQUIRED BY GOVERNING AUTHORITIES

A. 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 General Contractor shall give the Designer and such Authority timely notice of its readiness so the Designer may observe such inspection and testing.

B. Prior to the start of construction, the General Contractor shall complete application for a Building Permit and all other required permits to the local building department. Such Permit shall be displayed in a conspicuous location at the project site.

C. The General Contractor shall pay for Building Permit and all other permits required by local authorities unless otherwise indicated**.** The GC shall submit the permitting paperwork in a timely manner and it shall be complete, GC will follow up with the local inspectional services as necessary to secure the permit.

1.9 REFERENCE STANDARDS

A. For products specified by association or trade standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. The date of the standard is that in effect as of the bid date, except when a specific date is specified.

C. Obtain copies of standards when required by Contract Documents. Maintain copy at job sit during progress of the specific work.

1.10 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using the 50-division format and CSI/CSC's "MasterFormat 2020 Edition" numbering system.
   1. Section Identification: The Specifications use Section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete because all available Section numbers are not used. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of Sections in the Contract Documents.
   2. Division 1: Sections in Division 1 govern the execution of the Work of all Sections in the Specifications.

B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
   1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
   2. All instructions in the Specifications are addressed to the Contractor unless the responsibility of the Designer or Owner is clearly indicated.
      a. Where products are listed or described in outline form, the phrase “The Contractor shall furnish these products” is implied.
      b. Where installation instructions or performance criteria are listed or described in outline form, the phrase “The Contractor shall perform the Work in accordance with these requirements” is implied.
      c. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

C. Definitions:
   1. Indicated: The word "indicated" refers to graphic representations, notes or schedules on Drawings, Paragraphs or schedules in Specifications, and similar requirements in Contract Documents. Terms such as "shown", "noted", "scheduled", and "specified" are used to help locate a reference. No limitation on location is intended except as specifically noted.
   2. Directed: Terms such as "directed", "requested", "authorized", "selected", "approved", "required", and "permitted", are hereby defined as "directed by Designer", "requested by Designer", "authorized by Designer", etc. No implied meaning shall be interpreted to extend the Designer's responsibility into the Contractor's area of construction supervision.
   3. Approve: The term "approved" when used in conjunction with the Designer's action on the Contractor's submittals, applications, and similar requests, is limited to the duties and responsibilities of the Designer as stated in GENERAL CONDITIONS. Such approval shall not release the Contractor from responsibility to fulfill Contract requirements unless otherwise provided in the Contract Documents.
   4. Furnish: Supply and deliver to the Project Site, ready for unloading, unpacking, assembly, installation, and similar operations.
   5. Install: Operations at Project Site, including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
   6. Provide: To furnish and install, complete and ready for intended use.
   7. Installer: The Contractor or entity engaged by the Contractor, either as an employee, subcontractor, or sub-subcontractor for performance of 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.

8. Owner: The Awarding Authority.
9. Authority having Jurisdiction: Any State, Local, or legal authority, as defined by statute.

D. "Or Equal", "Or Equivalent": clause:
   1. Where products or materials are prescribed by manufacture name, trade name or catalogue reference, the word "or approved equal" shall be understood to follow.
   2. An item shall be considered equal or equivalent to the named item, if all of the following conditions are met:
      a. It is at least equal in appearance, quality, durability, strength and design.
      b. It meets or exceeds all performance requirements specified.
      c. It performs the function of the item to an equal or superior standard as does the named item.
   3. All deviations from products specified shall be submitted as substitutions. For related procedures, refer to Section 013300 – Submittal Procedures.

1.11 MISCELLANEOUS PROVISIONS

A. Discovery: If during the excavation or other work, articles of unusual value, or of historical or archaeological significance are encountered the ownership of such articles is retained by the Owner, and information regarding their discovery shall be immediately furnished to the Designer.
   1. If the nature of the article is such that the work cannot proceed without danger of damaging same, work in that area shall be immediately discontinued until the Designer has decided the proper procedure to be followed.
   2. Any time lost thereby shall be a condition for which the time of the Contract may be extended.
   3. All costs incurred after discovery in the salvaging of such articles shall be borne by the Owner.

1.12 WORK RESTRICTIONS

A. Comply with restrictions on construction operations.
   1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work to between 7:00 a.m. to 9:00 p.m., Monday through Friday, 8:00 a.m to 4 p.m on Saturdays and not allowed on Sunday's unless otherwise indicated. Work hours may be modified to meet Project requirements if approved by Owner and authorities having jurisdiction.
   1. Weekend Hours: Obtain Owner's written permission before proceeding with weekend hours.

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging for temporary utility services according to requirements indicated:
   1. Notify Owner not less than two days in advance of proposed utility interruptions.
   2. Obtain Owner's written permission before proceeding with utility interruptions.

D. Smoking and Controlled Substance Restrictions: Use of tobacco products, alcoholic beverages, and other controlled substances on Project site is not permitted.

E. Employee Identification: Owner will provide identification tags for Contractor personnel working on Project site following CORI background checks. Require personnel to use identification tags at all times.
   1. Prior to the start of construction all employees who will be on site are required to appear in person at the Everett Public Schools Human Resources Office located at 391 Broadway, Suite 103.

1.13 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
   1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
   2. Text Color: Text used in the Specifications, including units of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
   3. Hypertext: Text used in the Specifications may contain hyperlinks. Hyperlinks may allow for access to linked information that is not residing in the Specifications. Unless otherwise indicated, linked information is not part of the Contract Documents.
   4. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.

C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

D. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
   1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
   2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings and published as part of the U.S. National CAD Standard.
   3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

Section 01 1400 Work Restrictions

PART 1 - GENERAL

1.1 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.

1.2 DESCRIPTION OF WORK

A. The Work of this Section includes, but is not limited to, requirements for the following procedures:

1. Contractor responsibility for Architect's additional services.
2. Construction Documents, Project Electronic Files and graphic reproduction of Contract Documents.
3. Interpretation and modification of Contract Documents.
4. Contractor's reports.
5. Cleaning materials.
6. Safety and disposal requirements.
7. Conduct of the Work.
8. Hours of work.
9. Contractor use of premises.
10. Existing Utilities.
11. Noise control.
12. Safety and disposal requirements and accident prevention.
13. Welding and cutting.
14. Municipal police services.
15. Storage of materials off-site.
16. Dust control.
17. Cleaning during construction.
18. Debris control and removal of rubbish.
19. Pollution control.
20. Owner's occupancy requirements.

B. Related work includes, but is not limited to, the following work under other Sections:

1. Section 01 3200 – CONSTRUCTION PROGRESS DOCUMENTATION: Preparation and execution of construction schedule.
2. Section 01 3100 – PROJECT MANAGEMENT COORDINATION: Procedures and responsibilities for coordinating the Work.
3. Section 01 3300 – SUBMITTAL PROCEDURES. Submittal procedures.
4. Section 01 5000 – TEMPORARY FACILITIES AND CONTROLS, for additional information on temporary measures required during construction.
5. Section 01 7419 – CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL, for removal of non-hazardous debris including provisions for recycling and disposal.
6. Section 01 7700 – CLOSEOUT PROCEDURES: Procedures for completing the Work.
7. Section 01 7839– PROJECT RECORD DOCUMENTS: Preparation of record drawings and other documents.

1.3 SUBMITTALS

A. General: Refer to Section 01 3300 – SUBMITTAL PROCEDURES, for submittal provisions and procedures.

B. Layout of Temporary Construction Facilities: Submit location plan showing office, trailer and storage layout.

C. Logistics Plan:

1. Contractor shall submit to the Owner's Project Manager, at the Pre-construction Meeting, a detailed Logistics Plan, which shall include:

    a. Delivery Hours and Delivery Routes
    b. Gate location, and wheel washing location.
    c. Hours of Work
    d. Trailer Area, and Layout of trailers
    e. Parking locations for use of Owner and Contractor within the area of work
    f. Location for stockpiling plowed snow
    g. Locations for waste management containers.
    h. Protection of existing curbs and walkways.
    i. Lighting Plan

2. Refer to Section 01 5000 – TEMPORARY FACILITIES AND CONTROLS, for specifications for temporary construction and other items to be shown on Logistics Plan.
3. No work shall commence until the Logistics Plan has been approved.

D. Reports:

1. Documentation of off-site storage facilities.
2. With each Application for Payment, submit the following reports, compiled on a monthly basis:

a. Contractor's Monthly Report containing:

1) Executive Summary
2) Change Request Log
3) Cashflow Report
4) Safety Report
5) Permit Status
6) Drawing Revision Log tracking all direction issued by Architect in the Month
7) Request for Information Log
8) Submittal Log
9) Schedule Update, including summary of changes.
10) Testing and Inspection Log
11) Deficiency Log
12) Progress Photos

b. Proof of submission of Certified weekly payrolls to Owner.

1.4 CONTRACTOR RESPONSIBILITY TO THE OWNER FOR ARCHITECT'S ADDITIONAL SERVICES

A. The Contract between the Owner and the Architect contains provisions for additional services that may be required of the Architect during construction due to unforeseen conditions.

1. Where such additional services become necessary due to the activities of the Contractor, as determined by the Owner's Project Manager, costs for such services will be the responsibility of the Contractor, and will be deducted from the Contract Amount.

B. Additional services for which the Contractor is responsible for cost to the Owner may include the following activities of the Architect:

1. Review of Requests for Information and Change Order Requests for work determined to be covered in the Contract Documents. Refer to related Articles in this Section.

2. Continuation of construction administration beyond the dates specified for Final Completion of the Work: Refer to Section 01 3200 – CONSTRUCTION PROGRESS DOCUMENTATION.
3. Review of re-submitted submittals and Substitution Requests that have been rejected: Refer to Section 01 3300 – SUBMITTAL PROCEDURES.
4. Re-inspection of incomplete work: Refer to Section 01 7700 – CLOSEOUT PROCEDURES.
5. Design services for the resolution of non-conforming work.

1.5 CONSTRUCTION DOCUMENTS

A. The General Contractor and each Subcontractor shall retain copies of the Contract Documents issued to them for bidding purposes.

B. Contractor shall provide and maintain 1 hard copy set of all construction documents, 1 copy of project manual, and 1 copy of all addenda, in the Contractor's jobsite trailer and 1 copy of the bid construction documents, 1 copy of the project manual and all addenda in the Owner's Project Manager's Jobsite Trailer. All other hard copies of the Contract Documents required by the Contractor or Subcontractors for use during the construction period shall be purchased by the party requiring same. The Contractor shall provide hard copies of all issued sketches, RFIs, bulletins and all other direction issued by the architect to the Owner's Project Manager's representative, per his requests, at no additional cost.

1. Refer to provisions in this Section, for electronic copies of documents to be made available for the Contractor's use during construction.
2. Refer to Section 01 7839 – PROJECT RECORD DOCUMENTS, for additional sets to be provided by the Owner to the Contractor for the purpose of maintaining record prints of the Work as construction proceeds.

1.6 PROJECT ELECTRONIC FILES

A. Definitions:

1. Contract Documents: Printed hard copies of drawings and other documents, as defined in the General Conditions and listed in the signed copy of the Form of Agreement between Owner and Contractor.

a. In case of conflict between the Contract Documents and documents obtained through electronic means, the Contract Documents shall govern.

2. Project Electronic Files: Electronic copies of electronic documents for the Project, comprising drawings listed on Document 05 5433.13 – Data Licensing Agreement .

B. General Procedures: the Architect will transmit to the Contractor the Project Electronic Files, for use in the preparation of coordination and record documents for the Project.

1. Release Forms Required:

a. The Contractor shall sign a copy of Document 05 5433.13 – Electronic Release Form, to be filled out and issued by the Architect.
b. By signing the release form, the Contractor is acting on behalf of all their subcontractors for the Work of this Project.

2. Additional copies of the Project Electronic Files printed or on USB Flash Drive can be available from the Architect at an additional cost.
3. Contractor shall maintain an internet based file sharing system for sharing of large files, and provide access to all project team members of the Owner, Architect, and Owner's Project Manager. Architect uses Newforma and will not rely solely on Procore – the design team will return both submittals and RFI's thru Newforma, it is the contractors responsibility to receive, upload, file and transmit all project related information within Procore.

C. Electronic File Format:

1. Editable Files: Electronic files for drawings listed on Document 05 5433.13
2. Printable, Non-Editable Files: Electronic files for all Drawings in the Bid Set and for Drawings issued as Addenda will be furnished in "*.PDF" format (Adobe Acrobat Reader, version 6.0).
3. The Architect does not warrant that these electronic documents are compatible with any software or hardware other than those on which they were produced.
4. Revit models shall be shared, under the terms of the Electronic Release Form, for all major building trades, except only DWG format files will be available for civil and landscape trades.
5. The Architect shall have no obligation to release updated drawing files for subsequent bulletins, ASIs, PRs or CCDs issued by the architect. Any updated drawings issued shall be at the Architect sole discretion and shall not be considered as a precedent for any future updates.

D. Permitted Use of Project Electronic Files: Use of electronic files by the Contractor and Sub-Contractors is limited to the following activities:

1. Project Electronic Files may be used as a guide only for the preparation of Coordination Drawings and Record Drawings to be submitted as a requirement for the Project.
2. Project Electronic Files may be used as a guide only for preparation of shop drawings. Exact copies of Contract Documents will not be accepted if submitted for these purposes, unless specifically permitted by an individual specification Section.

E. Responsibilities of Contractor: Use and reproduction of Project Electronic Documents are subject to the following conditions:

1. The use of Project Electronic Files, reproduced either electronically or by other graphic reproduction methods, does not in any way alter the responsibilities of the Contractor for final system coordination. The Contractor shall incur all liability in this respect.
2. The Contractor and all Subcontractors are responsible for checking the dimensions and completeness of the Project Electronic Files, and for determining any possible errors and omissions, as required by the General Conditions.
3. The Contractor is responsible for updating Project Electronic Files as necessary to incorporate changes to the Work shown in Addenda and documents issued during construction.
4. In no event shall the Architect or any other Person or Firm involved in the creation, production or distribution of the reproducible or electronic documents, be liable to the persons utilizing the documents, on account of any claim for damages. Each Person or Firm utilizing these documents agrees to release, indemnify, hold harmless and defend the Architect, its officers, employees and consultants from an against all liability arising out of such firm's use of the electronic or reproduced documents or information referred to herein.

F. Ownership of Documents: By transferring copies of Project Electronic Files, the Architect does not in any way convey the copyright in the designs contained therein, nor do they convey a license to copy or use them for any purpose except as required for the construction of the Project.

G. License for Software: By transferring copies of Project Electronic Files, the Architect does not in any way convey transfer license to use the software on which the documents were prepared. Each entity using Project Electronic Files is responsible for obtaining licenses as needed for its use of those files.

1.7 GRAPHIC REPRODUCTION OF CONTRACT DOCUMENTS

A. Reproduction of Contract Documents issued for the Project, by graphic reproduction methods, shall be subject to the conditions outlined for reproduction of Project Electronic Files.

1.8 INTERPRETATION AND MODIFICATION OF CONSTRUCTION DOCUMENTS

A. Refer to General and Supplementary Conditions for general information on Change Orders, Work Change Directives, Field Orders and Architect's written amendments and clarifications. The intent of this Article is to provide for additional procedures to be followed during construction.

B. Requests for Information: Each time the Contractor or Subcontractor has a reasonable question on the interpretation of the Contract Documents, they shall submit in writing a Request for Information (RFI) to the Architect for response.

1. The Contractor shall examine field conditions carefully and review the Drawings and Specifications thoroughly prior to issuing an RFI.
2. The Contractor shall keep a log of RFI's, numbering them in the order in which they are issued.
3. Each RFI shall contain a clear statement of the question, references to relevant Contract Documents and additional background information as needed to facilitate the Architect's review.
4. All requests for information from Subcontractors shall be made through the Contractor and addressed to the Architect, and the Architect will distribute them as needed to the appropriate Consultants. A copy of each RFI shall be given to the Clerk of the Works.
5. RFI's shall be issued in a timely manner to permit a thorough review and preparation of a response by the Architect and their Consultants.
6. The Architect will prepare a written response to each RFI within 10 workdays, or sooner if the Contractor provides a realistic date when the response will be needed.

C. Proposal Requests: During construction, it may become necessary or desirable to modify the Contract Drawings or Specifications in response to concealed existing conditions, changes in the Owner's program or other unforeseen circumstances.

1. Where such a modification may involve a change in the Contract price or time, the Architect will prepare a Proposal Request describing the modification under consideration, including sketches or drawings, specifications and other information to permit pricing by the Contractor.

2. Copies of each Proposal Request and its attachments will be distributed to the Owner, Clerk of the Works and Contractor.
3. The Contractor shall respond in a timely manner with a Proposed Change Order detailing the estimated costs and change in Contract duration, for review by the Architect and approval by the Owner.
4. A Proposal Request will not constitute direction to proceed with the modification unless accompanied by a Work Change Directive and an estimated price.

D. Change Order Requests: If the Contractor is required to perform Work that they consider to represent a change in the cost of the Project, they may submit Change Order Requests for such work.

1. Each Change Order Request shall be accompanied by a document describing the modification under consideration, including sketches or drawings, specifications and other information to permit review of pricing by the Architect and Owner.
2. Distribute copies of each Change Order Request and its attachments to the Owner, Clerk of the Works and Architect.
3. The Architect and Owner will respond in a timely manner with a Proposed Change Order incorporating the Change Order Request if it is approved.
4. Verbal approval of a Change Order Request will not constitute direction to proceed with the modification unless accompanied by a Change Order, or a Construction Change Directive with an estimated price.
5. The OH&P on a change order is capped as per section 07 2000 for the entire change regardless of the number of subs involved, the GC shall divide up and distribute amongst the subs.

DI. Architect Review of Contractor-Generated Requests for Information and Change Order Requests: The Architect will review and prepare written responses to the Contractor's Requests for Information and Change Order Requests that are submitted in accordance with the requirements of this section.

1. If the Contractor submits an excessive number of requests for information that are incomplete, or for which the information requested is available from a careful study and comparison of the Contract Documents, field conditions, other Owner-provided information, Contractor-prepared or other prior Project correspondence or documentation, then the Contractor shall be responsible to the Owner for costs for Additional Services of the Architect to review those requests for information.
2. If the Architect determines that the Work covered by a Change Order Request is covered by the scope of the Contract Documents, the Contractor shall be responsible to the Owner for costs for Additional Services of the Architect to evaluate proposals and prepare Instruments of Service associated with such Change Order Request.

3. Refer to other paragraphs in this Section for procedures required in cases where Contractor is responsible to the Owner for costs for Additional Services of the Architect.

1.9 CONTRACTOR'S REPORTS

A. A daily report summarizing the work performed, weather conditions, number of workers, amount and kinds of equipment, unusual occurrences, and the like shall be submitted by the Contractor's Field Superintendent to the Architect, the Owner, the Clerk of the Works, each working day covering the work performed on the previous working day.

B. Form of the daily report shall be as approved by the Architect. Contractor’s Daily Report shall be made available to the Owner’s Project Manager’s on a daily basis.

C. Attention is directed to recent amendments to MGL Chapter 149, Section 27B requiring submission of certified weekly payrolls directly to the Awarding Authority by every contractor and subcontractor doing public work.

PART 2 - PRODUCTS

2.1 CLEANING MATERIALS

A. Use only those materials which will not create hazards to health or property and which will not damage surfaces.

B. Use only those cleaning materials and methods recommended by manufacturer or surface material to be cleaned.

C. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 - EXECUTION

3.1 CONDUCT OF WORK

A. The Contract Site shall be as shown on the Drawings, and shall include the entire area bound by the "Contract Limit" or "Limit of Work" lines as well as all areas outside of the Limit of Work Lines when required for performance of work under this Contract.

B. Contractor shall take all steps necessary to protect existing conditions to remain. Damage to existing work caused by Contractor's operations under this Contract shall be repaired at Contractor's expense.

C. Any street, paving, curb and/or sidewalk damaged as the result of work under this Contract, whether within or outside the limits of the Work, shall be repaired and/or replaced with new matching construction by the Contractor at his expense and in a manner satisfactory to the Architect and authorities having jurisdiction.

D. Protection of Curbs and Walkways: Where existing curbs or walks are to remain, or after new curbs or walks are constructed and trucking is required over them, they shall be suitably protected as shown on approved Logistics Plan.

E. Trenching and other work outside construction limits shall be expedited to the fullest and carried out with minimum of inconvenience to normal operations of Owner and public traffic. Walks, paved or landscaped areas over which temporary driveways cross shall, upon completion of the Work, be restored to their original condition with new construction. Temporary roadways shall be bridged over trenched areas.

F. Provide continuous, lawful, safe, adequate and convenient access to the site. Contractor shall construct and maintain in good, safe, usable condition temporary roads, capable of supporting emergency vehicles, and appurtenances as required, and when no longer required, remove temporary construction and restore such areas to their original condition, or as otherwise specified in the Contract Documents.

G. Conduct of Construction Personnel: Smoking is not permitted on project property, including the construction site.

3.2 HOURS OF WORK

A. Hours of work shall be from 7:00 AM until 6:00 PM, Monday thru Friday and Saturday from 8:00 AM and 4:00 PM, excluding Sundays, and Holidays, unless otherwise approved by the Owner.

B. Work is not permitted on Holidays, including Patriots Day.

C. The Contractor shall comply with applicable local ordinances.

3.3 CONTRACTOR USE OF PREMISES

A. General: Contractor shall have full use of premises for construction operations, including use of Project site, during construction period.

1. Confine operations at the site to areas permitted by laws, by-laws, permits and contract limit lines.
2. Do not unreasonably encumber the site with materials or equipment.
3. Coordinate with Owner and Architect work in connection with adjacent occupied buildings or areas, driveways, walks, and other facilities which would prevent access thereto or interrupt, restrict, or otherwise infringe upon use thereof.

B. General: Contractor will have limited use of premises for construction operations as indicated on Drawings by the Contract limits.

C. Use of Site: Limit use of premises to areas within the Contract limits indicated on Drawings. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Schedule any work that will obstruct adjacent streets in accordance with the requirements of the Owner.
2. Maintain access to existing walkways, streets and other adjacent occupied or used facilities. Do not close or obstruct walkways, streets or other occupied or used facilities without written permission from Owner and other authorities having jurisdiction.
3. Owner Occupancy: Allow for Owner occupancy of portions of Project site, including adjacent occupied buildings, and use by the public.
4. Driveways and Entrances: Keep driveways loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

a. Schedule deliveries to minimize use of driveways and entrances.
b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

5. Site Access: Owner will designate access roads to site and will define limits within which Contractor shall control movements of his personnel. Access to the site shall generally be via existing roadways and paved surfaces which Contractor shall maintain and restore to original condition.

D. Contractor Parking: Parking of Contractor's vehicles and those of his Subcontractors will be allowed only within Limit of Work area located where shown on Drawings. Contractor shall be responsible for parking arrangements, regulation and control of such parking and resulting traffic. Each Subcontractor shall make arrangements with Contractor for required parking of his vehicles.

E. On-Site Delivery and Storage of Construction Materials: Do not permit materials and fabricated work to be stacked on, or be transported over, floor and roof construction in such a manner as to stress any construction beyond the designed live loads. Assume full responsibility for protection and safekeeping of products stored on premises. Obtain and pay for use of additional storage or work areas needed for operations. Limit use of site to work and storage of materials for this project.

1. Maintain clean, dry storage areas for construction materials and minimize their exposure to dust. Review individual Division 3 through 50 Sections for additional requirements.
2. Do not store foamed polystyrene, polyurethane or like materials within the building. Take proper precautionary measures regarding the Storage of such materials outside the building.

F. Contractor shall take all necessary safety precautions and maintain an adequate level of fire protection at all times. This shall include the development of a plan for and compliance with NFPA 241, including but not limited to:

1. All work required to meet the requirements of NFPA 241.
2. Management of a hot work plan meeting the requirements of NFPA 241, and the requirements of Hopkinton Fire Department.
3. All temporary fire prevention measures and alarm systems required by the Hopkinton Fire Department or NFPA 241 during construction.

G. Do not use areas outside the Limit of Work area for temporary storage or structures without specific written permission from the Architect and Owner.

3.4 EXISTING UTILITIES

A. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Owner not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Owner's written permission.

B. Immediately repair any active existing utility lines (cables, conduit, ducts, and piping), damaged during the course of construction. Protect and maintain such active existing utilities in use, until relocation of same has been completed or utilities have been cut, capped, or prepared for new service connections, as applicable. Perform such repair and protection work at no additional cost to the Owner.

C. If any existing active utility not indicated on the Drawings is unintentionally damaged, and such utility is to remain, immediately repair the damage and restore the utility to its original integrity. Reimbursement of cost for performing such repair will be made by an adjustment in the Contract Price in accordance with the General Conditions of the Contract.

D. Any adjustment as outlined above shall be based on the assumption that the Contractor has performed in a prudent manner at the time such damage occurred. If extra expense is incurred in protecting and maintaining any utility line not shown on the Drawings, nor revealed by a “Dig-Safe” inspection, an adjustment in the Contract Price shall be made.

E. The Owner will cooperate and assist the Contractor in locating and identifying underground utilities. Contractor shall cooperate and participate in "Dig Safe" programs, notifying proper authorities before proceeding.

F. If it becomes necessary to interrupt power, water line, sewer, gas or other utilities to adjacent buildings, notify the Architect and Owner's Project Manager at least four (4) days in advance. Schedule such interruptions at such times as will minimize disruption and inconvenience to users.

3.5 NOISE CONTROL

A. Develop and maintain a noise-abatement program and enforce strict discipline over all personnel to keep noise to a minimum. Submit noise abatement program to Owner's Project Manager and Architect for review prior to use of noise generating equipment.

B. Execute construction work by methods and by use of equipment that will reduce noise and which will provide minimum interference with neighborhood activities.

1. Employ construction methods and equipment that will produce the minimum amount of noise.
2. Equip air compressors with silencers, and power equipment with mufflers.
3. Handle vehicular traffic and scheduling to reduce noise.

C. Do not allow radio and electronic entertainment equipment to be operated at volume that makes ordinary conversation difficult at ten (10) feet from such equipment.

D. Construction noise shall comply with City Regulations. No construction noise outside of work hours.

3.6 SAFETY AND DISPOSAL REQUIREMENTS

A. Standards: Maintain project in accordance with State Building Code and local ordinances.

B. Hazards Control: Store volatile wastes in covered metal containers and remove from premises. Prevent accumulation of wastes which create hazardous conditions. Provide adequate ventilation during use of volatile and noxious substances.

C. Disposal: Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws. Do not burn or bury rubbish and waste materials on project site. Do not dispose of hazardous wastes such as solvents, mineral spirits, oil, paint, paint thinner in storm or sanitary drains. Do not dispose of wastes into streams or waterways.

3.7 ACCIDENT PREVENTION

A. Comply with all Federal, State and municipal recommendations and requirements for safety and accident prevention, those of the Associated General Contractors of America and the American National Standards Institute (ANSI Standard A10.2). Conduct regular, frequent inspections of the site for compliance with safety regulations.

B. Neither the Owner nor the Architect will be responsible for providing a safe working place for the Contractor, Subcontractors, or their employees, or any individual responsible to them for the Work.

3.8 WELDING AND CUTTING

A. Any welding, cutting or other “hot work” shall be managed by the General Contractor under a plan they develop meeting the requirements of the contractor’s NFPA 241 plan, City of Everett Fire Department Requirements, and all applicable fire and safety codes.

1. General Contractor shall be responsible for tracking, management and enforcement of their “Hot Work” program for workers on site.

B. Where electric or gas welding or cutting work is done above or within ten (10) feet of combustible material or above space that may be occupied by persons, use interposed shields of incombustible material to protect against fire damage or injury due to sparks and/or hot metal.

C. Place tanks supplying gases for gas welding or cutting at no greater distance from the work than is necessary for safety, securely fastened and maintained in an upright position where practicable. Such tanks, when stored for use, shall be remote from any combustible material and free from exposure to the direct rays of the sun or high temperatures. Storage shall be secured under lock and key, to prevent unauthorized use of gas and equipment.

D. Maintain suitable fire extinguishing equipment near all welding and cutting operations. When operations cease for the noon hour or at the end of the day, thoroughly wet down the surroundings adjacent to welding and cutting operations. Properly protect any new materials, stored or installed, that are subject to water damage.

E. Station a worker equipped with suitable fire extinguishing equipment near welding and cutting operations to see that sparks do not lodge in floor cracks or pass through floor to wall openings or lodge in any combustible material. Keep the worker at the source of work which offers special hazards for a minimum of thirty (30) minutes after the job is completed to make sure that smoldering fires have not been started.

F. Place a qualified electrician in charge of installing and repairing electric and arc welding equipment.

3.9 MUNICIPAL POLICE SERVICES

A. Make all necessary arrangements with the municipal police department in advance of times when regular, off-duty, or reserve police officers will be needed for traffic control or protection due to operations performed under this Contract.

B. Pay police officers in accordance with rates established by the municipality for such services:

C. Extend the Worker's Compensation Insurance and Employer's Liability Insurance required under the General Contract to cover police used on the Project.

3.10 STORAGE OF MATERIALS OFF SITE

A. The Contractor, Subcontractors and Sub-subcontractors shall obtain prior written approval from the Owner through the Architect for permission to store materials to be incorporated in the Work, for which Progress Payments will be requested, at off-site locations. Any and all charges for storage, including insurance, shall be borne solely by the Contractor. Before approval, Owner will require proper proof of insurance and a letter in which is furnished:

1. The names of the Contractor and/or Subcontractor or subordinate Subcontractor leasing the storage area.
2. The location of such leased space.
3. Description of the leased area: The entire premises or certain areas of a warehouse giving the number of floors or portions thereof.
4. The date on which the material is first stored.
5. The value of the material stored.
6. Transfer of title for such materials in a form acceptable to the Owner.
7. Certificate of Insurance listing the Owner as additional named insured, equal to at least the cost of the material stored.
8. Photographic evidence of the material, how it is stored, and demonstrating the requirements of this section.

B. Requirements for storage facility at which materials will be stored off-site:

1. The storage facility shall be a bonded warehouse.
2. The Contractor shall permit access to the storage facility to the Owner’s Project Manager upon request.

C. Contractor, Subcontractors and subordinate Subcontractors shall provide prior to the request for payment for such stored materials, adequate advanced notice, to the Architect so that the Owner or Architect can inspect, at their convenience, the materials being stored at any location.

D. Each sealed carton shall be marked with the Project name, the Owner’s name and the Architect's name as they appear in the Agreement.

E. A perpetual inventory shall be maintained for all materials held in storage for which payment has been requested.

F. Payment for materials stored off site shall be at the sole discretion of the Owner. Any additional costs to the Owner resulting from storage of material off site for which payment is requested, such as, but not limited to, travel expenses and time for inspectors shall be back charged to, and paid by, the Contractor.

3.11 DUST CONTROL

A. Maintain the construction site, stockpiles, access, detour, and haul roads, staging and parking area used for the Work, free of dust which would cause a hazard or a nuisance to those at the site or adjacent sites.

B. Provide environmentally safe and positive methods and dust control materials to minimize raising dust from construction operations, and provide positive means to prevent air-borne dust from dispersing into the atmosphere.

C. Wet down dry materials and rubbish to lay dust and prevent blowing dust.

D. Clean interior spaces prior to the start of finish painting and continue cleaning on an as-needed basis until painting is finished.

E. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly-coated surfaces, including paint, coatings, sealants, caulking, adhesives.

F. Furnish, erect, and maintain for the duration of the work period, temporary fire-retardant dust proof coverings and partitions as required to prevent the spread of dust beyond the immediate area where work is being performed.

G. These provisions do not supersede any specific requirements for methods of construction or applicable regulations or general conditions set forth elsewhere in the Contract with regard to performance obligations of the Contractor.

3.12 CLEANING DURING CONSTRUCTION

A. Execute cleaning during progress of work and at Substantial Completion, as required by General Conditions and as herein specified.

B. Maintain premises and public properties free from accumulations of waste, debris and rubbish caused by operations. At completion of work, remove waste materials, rubbish, tools, equipment, machinery, and surplus materials, and clean all exposed surfaces; leave project clean and ready for occupancy.

C. Cleaning shall be in addition to cleaning specified under other sections and shall include all surfaces, interior and exterior in which or to which the Contractor has had access.

D. Refer to Sections of the Specifications for cleaning of specific products.

E. Execute cleaning to ensure that the building, the site, and adjacent properties are maintained free from accumulations of waste materials and rubbish and windblown debris, resulting from construction operations.

F. Provide on-site containers for collection of waste materials, debris and rubbish.

G. Remove waste materials, debris and rubbish from the site periodically and dispose of at legal areas off site.

H. Handle materials in a controlled manner with as few handling as possible. Do not drop or throw materials from heights.

I. Schedule cleaning operations so that dust and other contaminants resulting from cleaning processes will not fall on wet newly painted surfaces, uncured caulking, sealants, adhesives, etc.

3.13 DEBRIS CONTROL AND REMOVAL OF RUBBISH

A. Ensure that each Subcontractor engaged in the Work bears full responsibility for cleaning up during on a daily bases and immediately upon completion of his work, and removes all rubbish, waste, tools, equipment, and appurtenances caused by and used in the execution of his work; but this shall in no way be construed to relieve the General Contractor of primary responsibility

for maintaining a clean building and site free of debris, leaving all work broom clean and in a condition satisfactory to the Architect, Project Manager, and Owner.

B. Provide at least one tightly built chute serving each level which shall lead down to angle offset and sliding panel chute at a convenient loading point for trucks or dumpsters.

C. Do not permit any material to be thrown from open floors, windows or roof of the building.

D. Immediately after unpacking, remove all packing materials, case lumber, excelsior, wrapping and other rubbish, flammable and otherwise, from the building and premises.

E. Initiate and maintain a specific program to prevent the accumulation of debris at the construction site, storage and parking areas, or along access roads and haul routes:

Provide containers for deposit of debris and schedule periodic collection and disposal of debris. Prohibit overloading of trucks to prevent spillage on access and haul routes.

F. Contractor shall make provisions for snow and ice removal, as required. In addition Contractor shall provide wheel-washing stations at site egress gates, as directed by the Project Manager, to maintain clean neighborhood streets.

3.14 POLLUTION CONTROL, GENERAL

A. Provide methods, means and facilities required to prevent contamination of soil, water and atmosphere by the discharge of noxious substances from construction operations.

B. Remediation of Spills: Provide equipment and personnel, perform emergency measures required to contain any spillages, and to remove contaminated soils or liquids. Excavate and dispose of contaminated earth off site and replace with suitable uncontaminated compacted fill and topsoil.

C. Take special measures to prevent harmful substances from entering public waters. Prevent disposal of wastes, effluents, chemicals, or other such substances adjacent to streams or in sanitary or storm sewers.

D. Provide systems for control of atmospheric pollutants. Prevent toxic concentrations of chemicals. Prevent harmful dispersal of pollutants into the atmosphere.

3.15 OWNER'S OCCUPANCY REQUIREMENTS

A. Full Owner Occupancy: Owner will occupy adjacent buildings during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing street and site access at all times, unless otherwise indicated.

1. Maintain access to existing walkways, streets and other adjacent occupied or used facilities. Do not close or obstruct walkways, streets or other occupied or used facilities without written permission from Owner, and authorities having jurisdiction.
2. Provide not less than 72 hours' notice to Owner of activities that will affect Owner's operations.

B. Owner Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed areas of building, before Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.

1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied before Owner occupancy.
2. Obtain a Certificate of Occupancy from authorities having jurisdiction before Owner occupancy.
3. Before partial Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of building.
4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of building.

C. If the Project is substantially complete by the specified date for Substantial Completion, the Owner at his election may from time to time, or permanently, occupy the building or any portion thereof as the work is completed to such a degree as will, in the opinion of the Owner, permit the use of the building or other portions of the Project for the purpose for which they are intended.

D. The Owner will, prior to any such partial occupancy, give notice to the Contractor thereof and such occupancy shall be predicated upon the following conditions:

1. In the case of partial occupancy prior to the stipulated completion date, the Owner shall secure endorsement from the Contractor’s insurance carrier and consent of the surety

permitting occupancy of the building or use of the Project during the remaining period of construction.

2. In the case of partial occupancy after the stipulated completion date, the Contractor shall extend all the necessary insurance coverage as stipulated until the date of Final Acceptance of the Project. Owner's use and occupancy prior to final Acceptance shall not relieve the Contractor of his responsibility to maintain the insurance coverage as required by the Contract Documents.
3. In case of such partial occupancy, the guarantee period called for by the Contract Documents shall commence on the date of Substantial Completion of the Phase containing the guaranteed Work.
4. Occupancy of the building or any portion thereof by the Owner, shall not constitute an acceptance of the Work or of work not performed in accordance with the Contract Documents or relieve the Contractor of responsibility to perform any work required by the Contract but not completed at the time of occupancy.
5. If the Owner occupies the building as a result of the Contractor’s failure to substantially complete the work by the specified date, the Contractor shall pay maintenance costs on the portion of the building occupied under this Agreement until Substantial Completion.
6. The Contractor shall be required to furnish heat, electricity and water used in the occupied portion of the building, from the time of the occupancy by the Owner until Substantial Completion.

END OF SECTION

Section 01 2500 Substitution Procedures

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Requirements:
   1. Section 01 6000 "Product Requirements" for general requirements for submitting comparable product submittals for products.
   2. Divisions 02 through 33 Sections for specific requirements and limitations for substitutions.

1.3 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
   1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
   2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.
   3. Substitutions for Convenience: Changes proposed by Contractor in accordance with M.G.L. c.30, §39M(b).

1.4 ACTION SUBMITTALS

A. Make Submittals in accordance with Section 01 3300 “Submittal Procedures.”

B. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
   1. Substitution Request Form: Use facsimile of form provided in Project Manual.
   2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
      a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
      b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.

c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. Certificates and qualification data, where applicable or requested.
g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of architects and owners.
h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
j. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
k. Cost information, including a proposal of change, if any, in the Contract Sum.
l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
   a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.

1.5 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.7 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.
   1. Conditions: Architect will consider Contractor's request for substitution in accordance with M.G.L. c.30, §39M(b) when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
      a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
      b. Substitution request is fully documented and properly submitted.
      c. Requested substitution will not adversely affect Contractor's construction schedule.
      d. Requested substitution has received necessary approvals of authorities having jurisdiction.
      e. Requested substitution is compatible with other portions of the Work.
      f. Requested substitution has been coordinated with other portions of the Work.
      g. Requested substitution provides specified warranty.
      h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Architect will consider requests for substitution in accordance with M.G.L. c.30, §39M(b) and if received within 60 days after commencement of the Work. Requests received after that time may be considered or rejected at discretion of Architect.
   1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
      a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
      b. Requested substitution does not require extensive revisions to the Contract Documents.
      c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
      d. Substitution request is fully documented and properly submitted.
      e. Requested substitution will not adversely affect Contractor's construction schedule.
      f. Requested substitution has received necessary approvals of authorities having jurisdiction.
      g. Requested substitution is compatible with other portions of the Work.
      h. Requested substitution has been coordinated with other portions of the Work.
      i. Requested substitution provides specified warranty.
      j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
   2. Owner shall be entitled to reimbursement from Contractor for amounts paid to Architect for making agreed-upon changes to the Drawings and Specifications resulting from such substitutions.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

Section 01 2600 Contract Modification Procedures

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

B. Related Requirements:
1. Document 00 7200 "General Conditions" for general requirements for Contract modification procedures.
2. Section 01 2500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.

1.3 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710.

1.4 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
2. Within time specified in Proposal Request or 20 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
    a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include costs of labor and supervision directly attributable to the change.
    d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
    e. Quotation Form: Use forms acceptable to Architect.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.
   1. Include a statement outlining 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 the Contract Time.
   2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
   3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
   4. Include costs of labor and supervision directly attributable to the change.
   5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
   6. Comply with requirements in Section 01 2500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
   7. Proposal Request Form: Use form acceptable to Architect.

1.5 CHANGE ORDER PROCEDURES

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

1.6 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: Architect may issue a Construction Change Directive. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
   1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
   1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

Section 01 2900 Payment Procedures

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Requirements:
1. Section 01 2400 “Schedule of Values”
2. Section 01 2600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
3. Section 01 3200 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.
4. Section 01 8113 "Sustainable Design Requirements" for administrative requirements governing submittal of cost breakdown information required for sustainable design documentation.

1.3 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.
1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
2. Owner’s receipt of updates on monthly deliverables, as required by the Contract Documents, shall be a prerequisite to review and approval of applications for payment.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

C. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. 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 were made.
   2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
   3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
   4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.

E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.
   1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.
   2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
   3. Provide summary documentation for stored materials indicating the following:
      a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
      b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
      c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

F. Transmittal: Submit four signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
   1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
   1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
   2. When an application shows completion of an item, submit conditional final or full waivers.
   3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
   4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
   5. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.

H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
   1. List of subcontractors.
   2. Schedule of values.
   3. Contractor's construction schedule (preliminary if not final).
   4. Products list (preliminary if not final).

5. Sustainable design action plans, including preliminary project materials cost data.
6. Schedule of unit prices.
7. Submittal schedule (preliminary if not final).
8. List of Contractor's staff assignments.
9. List of each Trade Contractor's staff assignments.
10. List of Contractor's principal consultants.
11. Copies of building permits.
12. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
13. Initial progress report.
14. Report of preconstruction conference.

I. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

J. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706.
5. AIA Document G706A.
6. AIA Document G707.
7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
9. Final liquidated damages settlement statement.
10. Evidence of completion of LEED documentation including response as required to USGBC review comments and requests for additional information as may occur.

1.5 CONTRACTOR’S RESPONSIBILITY TO OWNER FOR ARCHITECT’S ADDITIONAL SERVICES

A. The Contract between Owner and Architect contains provisions for additional services that may be required of the Architect during construction due to unforeseen conditions.
1. Where such additional services become necessary due to the activities of Contractor, as determined by Owner’s Project Manager, costs for such services shall be the responsibility of Contractor and will be deducted from the Contract Amount.

B. Additional services by Architect, for which Contractor shall be responsible, may include, but are not necessarily limited to, the following:
1. Review of Requests for Informatiin (RFI) and Change Order Requests for work determined to be already covered in the Contract Documents.

2. Continuation of construction administration beyond the date specified for Final Completion of the Work; refer to Section 01 3200 “Construction Progress Documentation.”
3. Review of re-submitted Submittals and Substitution Requests that have already been rejected; refer to Section 01 3300 “Submittal Procedures.”
4. Re-inspection of incomplete work, refer to Section 01 7700 “Closeout Procedures.”
5. Design services required for the resolution of non-conforming work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

Section 01 3100 Project Management and Coordination

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.

1.2 DESCRIPTION OF WORK

A. The Work of this Section includes, but is not limited to, requirements for the following procedures:

1. Responsibility for coordination of the Work.
2. Surveying and engineering.
3. Coordination Drawings.

B. Related work includes, but is not limited to, the following work under other Sections:

1. General requirements for submittals: Section 01 3300 – SUBMITTAL PROCEDURES.

1.3 SUBMITTALS

A. Prepare and submit documentation in accordance with Section 01 3300 – SUBMITTAL PROCEDURES.

B. Drawings:

1. Survey of existing project conditions: Submit a set of reproducible drawings and certificate signed by registered engineer or land surveyor, certifying that elevations and locations of improvements are in conformance, or non-conformance with Contract Documents.
2. Survey of base plate elevations and anchor bolt locations.
3. Survey of as-built conditions: Certified survey showing all as-built dimensions, locations, angles and elevations of construction, to be submitted at Substantial Completion of the Work.
4. Coordination Drawings as described in this Section.

C. Certifications required for Work described in this Section:

1. Field Engineering: Submit name and address of surveyor and professional engineer to Architect.

1.4 COORDINATION

A. General: The Contractor shall be responsible for the proper fitting of all work and the coordination of the operations of all trades, Subcontractors, material installers and equipment engaged upon the Work. He shall perform or cause Subcontractors to perform all cutting, fitting, adjusting and patching necessary to make the several parts of the Work come together properly and to fit the Work to receive or be received by that of other contractors.

B. Project Supervision: The Contractor shall give his personal supervision to the Work and shall assign the following site staff for the Project:

1. Two Full-time Superintendents: Each superintendent shall be licensed in the Commonwealth of Massachusetts, with the authority to act on behalf of the Contractor. The Superintendents shall supervise the Work at all times throughout the duration of the Project.
2. Project Manager
3. Assistant Project Manager/Project Engineer
4. Contractual penalties, per the GENERAL CONDITIONS, shall be enforced if the contractor fails to adequately staff the project on site.
5. Quality Control Monitor: A member of Contractor’s full-time on-site staff assigned to monitor the quality of the Work. The Quality Control Monitor may also be assigned to oversee and document construction waste removal.
6. Building Information Modeling (BIM)/Virtual Design and Construction (VDC) Manager responsible for the coordination process of the Plumbing, Fire Protection, HVAC and Electrical Trades as required by documents.
7. The Contractor shall also provide an adequate staff for the proper coordination and expediting of the Work.

C. The staff submitted in the Contractor’s prequalification Statement of Qualification submitted to prequalify for the project shall be used to staff the project. Any substitution of superintendents, or project manager must be submitted to the Owner’s satisfaction and approved by the Owner.

D. Coordination with Subcontractors: The Contractor shall be in charge of the entire Work and shall be responsible for the prompt coordination of all trades, including his own forces and his various Subcontractors, as well as the Owner's separate contractors, if they are on the job during the Contractor's operations, and shall become fully familiar with all work required under the Contract.

1. The above notwithstanding, each Subcontractor shall assume responsibility for the correctness and adequacy of his work. Each Subcontractor shall be responsible for and pay for all damage done by his work and his workers.
2. No Subcontractor shall be permitted on the site without the Superintendent present to supervise the Work.

E. Care shall be given to the proper scheduling, delivery, and installation of items to be built into rough construction which will affect the latter portions of the Work, such as anchors, pipe sleeves, inserts, conduit, pipes, lugs, clips, brackets, braces, hangers, bolts, miscellaneous metal, and similar items. These items are not necessarily specified under the trade Section under which they are to be installed. The Contractor shall ascertain that all are properly installed in their correct locations at the proper time, so as to prevent cutting and patching of finished work.

F. The Contractor shall be fully responsible for coordination of general construction work with that of Subcontractors for PLUMBING, ELECTRICAL, HEATING AND VENTILATING and all other specialized trades. He shall investigate, together with the Subcontractors involved, the routing of pipe, ductwork, and conduit with particular attention to interference of structural members, other pipes, ducts, and conduit cuts, headroom conditions, door and window openings and swings, pipe chases, and similar features of the building which may affect installation and proper functioning of such items.

G. Changes in design locations which may be necessary in the routing of pipes and ducts, or in the location of any mechanical, electrical or other equipment or in the location of other building elements, shall be anticipated and made prior to installation. Additional compensation will not be allowed for costs incurred as a result of the Contractor's failure to anticipate the necessity for such changes.

H. There shall be no change or variation in ceiling height, wall layout, shaft, chase, furring or other dimensions shown on Drawings without the specific written approval of the Architect.

I. The Contractor's responsibility for the coordination of all work under the Contract shall be complete, and shall extend to all modifications in the Work, whether or not such modifications entail a change in the Contract Price. Where the Contract Documents allow an optional material or method of performing a portion of the Work, or where the Contractor is ultimately allowed or directed to perform a part of the Work using a substitute material or method, the Contractor shall provide all other coordination and additional work that such change necessitates, without any additional cost to the Owner.

1.5 SURVEYING AND ENGINEERING, GENERAL

A. The Contractor shall employ a project engineer who is a qualified land surveyor registered to practice in the Commonwealth of Massachusetts, who shall establish and maintain grades and levels and permanent bench marks. In addition, the Contractor shall designate one person from

within his organization, with engineering experience, who shall do the usual engineering work required, including leveling, checking, and verifying wall and partition lines, elevations, etc.

B. Prior to commencement of any excavation or filling work on the site, the project engineer shall check locations of all structures and other fixed items with regard to property lines and other existing conditions. The Contractor shall be fully responsible for reporting to the Architect discrepancies between the dimensions and/or locations indicated on the Contract Drawings and those as they actually exist on the site.

C. After verification of all dimensions and locations, the Contractor shall submit to the Architect such verification in written form bearing the professional stamp of the surveyor. Failure to do so shall mean that the Contractor assumes responsibility for all corrective measures required at no addition to the Contract amount.

D. The Contractor shall lay out the Work and shall be responsible for all lines, elevations, and measurements of the building, grading, paving and other work under the Contract. He shall exercise proper precaution to verify the dimensions shown on the Drawings before laying out the Work and will be held responsible for any error resulting from his failure to exercise such precaution.

1.6 FIELD ENGINEERING REQUIREMENTS

A. General: Provide professional field engineering services, establish grades, lines and levels, by use of recognized engineering survey practices.

1. The Contractor’s attention is directed to the fact that Drawings have been prepared based on the assumption that all existing walls are set in orthogonal relationship to each other. The Contractor will be responsible for verifying the precise angle between existing walls, and bring to the attention of the Architect any conditions that deviate from orthogonal.
2. Submit surveys and documentation as described herein.

B. Scope of Field Engineering:

1. Architectural features in the existing construction for which precise vertical and horizontal reference points are required include, but are not limited to, the following:

a. Top of foundation wall.
b. Windowsill heights at each floor level.
c. Top of decorative masonry cornice and existing roof edge at perimeter of building.
d. Horizontal layout of existing masonry openings in all exterior walls.
e. All other reference points shown on Drawings.

2. Site features:

    a. Existing grades, including grades immediately adjacent to existing building.

3. Structural elements: For each column, a precise base plate elevation and horizontal location shall be established. After the anchor bolts have been set in the foundations and leveling plates have been set in grout, the top surface of each leveling plate shall be surveyed to determine the following locations. Submit survey data to the Architect for review and approval prior to fabrication of structural steel.

    a. Elevation of top surface of each leveling plate.
    b. Precise position of the center of each anchor bolt in each leveling plate.

C. Qualifications of Surveyor or engineer: Qualified engineer or registered land surveyor, acceptable to Architect and the Owner.

1. Registered professional engineer of the discipline required for the specific service on the Project, licensed in the Commonwealth of Massachusetts.

D. Survey Reference Points:

1. Datum: Location of control datum to be used as reference point for horizontal and vertical survey measurements is shown on Drawings.
2. Locate and protect control and reference points prior to starting site work, and preserve all permanent reference points during construction.

    a. Make no changes or relocations of control points without prior written notice to Architect.

3. In the event that any reference point is lost or destroyed, or requires relocation due to necessary changes in grades or construction, perform the following actions without delay:

    a. Report change to Architect immediately.
    b. Replacement of reference point shall be performed by surveyor, as directed by Architect.

4. Project Survey Requirements:

    a. Establish a minimum of two permanent benchmarks on the site, referenced to data established by survey control points.

b. Establish lines and levels, locate and lay out by instrumentation and other appropriate means.
c. Verify layouts periodically using the same means as those by which they were established.

E. Records:

1. Maintain a complete, accurate log of all control and survey work as it progresses.
2. Prepare and submit a survey of existing conditions and a final survey of as-built conditions containing all relevant horizontal and vertical dimensions and reference point data.

1.7 COORDINATION DRAWINGS

A. The Contractor shall be responsible for the coordination of all mechanical and electrical work with architectural requirements including ceiling layouts. Well in advance of commencing work in any area and before materials are fabricated or work begun, he shall submit to the Architect complete Coordination Drawings in the form of reproducible transparencies in a scale not less than 1/4” = 1’-0”. Congested areas and sections through shafts shall be at a scale not less than 3/8” = 1’-0”.

B. Coordination Drawings shall indicate the necessary offsets for all ductwork, piping, conduit, and other items to clear the work of all other trades, and structure, and to maintain the required ceiling height, ceiling layout and partition layout.

C. Prepare Coordination Drawings as follows:

1. The background for coordination drawings shall show the reflected ceiling plan.
2. Contractor shall require HEATING AND VENTILATING Subcontractor to prepare original Drawings showing all ductwork, hot water and other heating lines, based on approved Sheet Metal Fabrication Drawings and related mechanical submittals.
3. Contractor shall have transparencies made there from, and shall distribute them to the Architect and the Plumbing Subcontractor for the next step.
4. Contractor shall then require PLUMBING Subcontractor to indicate all his equipment and plumbing lines on these transparencies.
5. Contractor shall then require FIRE PROTECTION Subcontractor to indicate his equipment and piping on these transparencies.
6. Contractor shall require the ELECTRICAL Subcontractor to indicate his equipment and conduit lines on the same Drawings.
7. Contractor shall resolve conflicts and then submit these transparencies to the Architect for review.
8. Submit complete final set of coordination drawings for record purposes.

D. Coordination Drawings shall bear the signature of all subcontractors involved indicating that all space conditions have been satisfactorily resolved. In addition, the Drawings shall bear the Contractor's stamp bearing the notation "Drawings Have Been Checked and Coordinated with all Trades". Drawings without these notations, or Drawings submitted more than 120 days after the execution of the Contract, will not be accepted or reviewed by the Architect.

E. If any space conflicts cannot be resolved by the Contractor, he shall immediately notify the Architect.

F. Coordination Drawings are for the Contractor's and Architect's use during construction and shall not be construed as replacing any Shop, "As-Built", or other Record Drawings required elsewhere in these Contract Documents.

G. Architect's review of Coordination Drawings shall not relieve General Contractor from his overall responsibility for coordination of all work performed pursuant to the Contract or from any other requirements of the Contract.

H. Access panel coordination: Show locations and sizes of all access panels for all trades on Coordination Drawings.

PART 2 - PRODUCTS **[NOT USED]**

PART 3 - EXECUTION **[NOT USED]**

END OF SECTION

Section 01 3200 Construction Progress Documentation

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
   1. Contractor's Construction Schedule.
   2. Construction schedule updating reports.
   3. Daily construction reports.
   4. Material location reports.
   5. Site condition reports.
   6. Unusual event reports.
   7. Time for Completion and Liquidated Damages.
   8. Sequencing requirements.
   9. Requirements for scheduling closeout activities.
   10. Critical Path Method Schedule preparation and submission.
   11. Photographic documentation of construction.

B. Related Requirements:
   1. Section 01 3300 "Submittal Procedures" for submitting schedules and reports.
   2. Section 01 4000 "Quality Requirements" for schedule of tests and inspections.

1.3 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.
   1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
   2. Predecessor Activity: An activity that precedes another activity in the network.
   3. Successor Activity: An activity that follows another activity in the network.

1.4 INFORMATIONAL SUBMITTALS

A. Make Submittals in accordance with Section 01 3300 “Submittal Procedures.”

B. Preliminary Construction Schedule: Within 10 calendar days following receipt of the Notice to Proceed, submit a CD containing an electronic copy (PRX) and two paper copies for review by the Owner, Project Manager and the Architect. This preliminary schedule shall include the project contract dates, milestones, long lead items, major work activities and a critical path to completion. (approximately 100 to 150 schedule activities)

1. Acceptance of the Preliminary Construction Schedule by the Owner, Project Manager and Architect shall be a prerequisite to certification of the first Application for Payment.

C. Format for Submittals: Submit required submittals in the following format:
   1. PDF file.

D. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

E. Construction Schedule Updating Reports: Submit with Applications for Payment.

F. Daily Construction Reports: Submit at weekly intervals.

G. Material Location Reports: Submit at weekly intervals.

H. Site Condition Reports: Submit at time of discovery of differing conditions.

I. Unusual Event Reports: Submit at time of unusual event.

1.5 QUALITY ASSURANCE

A. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Section 01 3100 "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's Construction Schedule, including, but not limited to, the following:
   1. Review software limitations and content and format for reports.
   2. Verify availability of qualified personnel needed to develop and update schedule.
   3. Discuss constraints, including phasing, work stages, area separations, and partial Owner occupancy.
   4. Review submittal requirements and procedures.
   5. Review time required for review of submittals and resubmittals.
   6. Review requirements for tests and inspections by independent testing and inspecting agencies.
   7. Review time required for Project closeout and Owner startup procedures, including commissioning activities.
   8. Review and finalize list of construction activities to be included in schedule.
   9. Review procedures for updating schedule.

1.6 COORDINATION

A. Coordinate Contractor's Construction Schedule with the schedule of values, submittal schedule, progress reports, payment requests, and other required schedules and reports.
   1. Secure time commitments for performing critical elements of the Work from entities involved.
   2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

1.7 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established for commencement of the Work to date of Substantial Completion.
   1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

B. Activities: Treat each floor or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
   1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
   2. Submittal Review Time: Include review and resubmittal times indicated in Section 01 3300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.
   3. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
   4. Commissioning Time: Include no fewer than 15 days for commissioning.
   5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
   6. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.

C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
   1. Phasing: Arrange list of activities on schedule by phase.
   2. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Section 01 1000 "Summary." Delivery dates indicated stipulate the earliest possible delivery date.
   3. Work Restrictions: Show the effect of the following items on the schedule:
      a. Coordination with existing construction.
      b. Limitations of continued occupancies.
      c. Uninterruptible services.
      d. Use-of-premises restrictions.
      e. Seasonal variations.
      f. Environmental control.
   4. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
      a. Subcontract awards.
      b. Submittals.
      c. Purchases.
      d. Mockups.
      e. Fabrication.
      f. Sample testing.
      g. Deliveries.
      h. Installation.
      i. Tests and inspections.
      j. Adjusting.
      k. Curing.
      l. Building flush-out.
      m. Startup and placement into final use and operation.
      n. Commissioning.

D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion.

E. Cost Correlation: Superimpose a cost correlation timeline, indicating planned and actual costs. On the line, show planned and actual dollar volume of the Work performed as of planned and actual dates used for preparation of payment requests.
   1. See Section 01 2900 "Payment Procedures" for cost reporting and payment procedures.

F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
   1. Unresolved issues.
   2. Unanswered Requests for Information.
   3. Rejected or unreturned submittals.
   4. Notations on returned submittals.
   5. Pending modifications affecting the Work and the Contract Time.

G. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
   1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
   2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
   3. As the Work progresses, indicate final completion percentage for each activity.
   4. Schedule update shall include as separate columns for each item:
      a. Start Date, Completion Date, Duration, Float,
      b. Variance from baseline schedule
      c. Variance from previous schedule update,
      d. Variance of float from the previous schedule update

H. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.

I. Distribution: Distribute copies of approved schedule to Architect, Owner, Trade Contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
   1. Post copies in Project meeting rooms and temporary field offices.
   2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

1.8 GANTT-CHART SCHEDULE REQUIREMENTS

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's Construction Schedule within 30 days of date established for commencement of the Work.
   1. Base schedule on the startup construction schedule and additional information received since the start of Project.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

1.9 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
   1. List of subcontractors at Project site.
   2. List of separate contractors at Project site.
   3. Approximate count of personnel at Project site.
   4. Equipment at Project site.
   5. Material deliveries.
   6. High and low temperatures and general weather conditions, including presence of rain or snow.
   7. Testing and inspection.
   8. Accidents.
   9. Meetings and significant decisions.
   10. Unusual events.
   11. Stoppages, delays, shortages, and losses.
   12. Meter readings and similar recordings.
   13. Emergency procedures.
   14. Orders and requests of authorities having jurisdiction.
   15. Change Orders received and implemented.
   16. Construction Change Directives received and implemented.
   17. Services connected and disconnected.
   18. Equipment or system tests and startups.
   19. Partial completions and occupancies.
   20. Substantial Completions authorized.

B. Material Location Reports: At weekly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:
   1. Material stored prior to previous report and remaining in storage.
   2. Material stored prior to previous report and since removed from storage and installed.
   3. Material stored following previous report and remaining in storage.

C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

D. Unusual Event Reports: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, responses by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.
   1. Submit unusual event reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.

PART 2 -

2.1 CONSTRUCTION PHOTOGRAPHS

A. Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of 8 megapixels, and at an image resolution of not less than 3200 by 2400 pixels.

B. Photographer: Engage a qualified photographer to take construction photographs.

C. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.

1. Maintain key plan with each set of construction photographs that identifies each photographic location.

D. Digital Images: Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

1. Date and Time: Include date and time in file name for each image.

2. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Architect and Owner.

E. Preconstruction Photographs: Before starting construction, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.

1. Flag construction limits before taking construction photographs.

2. Take 20 photographs to show existing conditions adjacent to property before starting the Work.

3. Take 20 photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.

4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

F. Periodic Construction Photographs: Take 20 photographs weekly, and submit with timing each month adjusted to coincide with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

G. Final Completion Construction Photographs: Take 20 color photographs after date of Substantial Completion for submission as project record documents. Architect and Owner will inform photographer of desired vantage points.

PART 3 -

3.1 SCHEDULING THE WORK

A. The Contractor shall perform the Work in accordance with the approved CPM Schedule.

1. If during the progress of the job the Contractor misses a start date of an activity on the critical path, the Contractor shall, within five working days, advise the Architect in writing of action proposed to bring the Work up to schedule, and shall submit a revised CPM Schedule indicating such action, together with a typed list of such revisions.

2. If the Contractor fails to submit a revised schedule within the specified time or if the Architect is not convinced of the efficacy of the measures proposed, the Owner may, at its option, require the Contractor to accelerate the progress of the Work, without additional cost to the Owner, by increasing the work force or the hours of work, or by other reasonable means approved by the Architect.

3.2 EXECUTION (Not Used)

END OF SECTION

Section 01 3300 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 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
1. Submittal schedule requirements.
2. Administrative and procedural requirements for submittals.

B. Related Requirements:
1. Section 01 2900 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
2. Section 01 3100 "Project Management and Coordination" for submitting coordination drawings and subcontract list and for requirements for web-based Project software.
3. Section 01 3200 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
4. Section 01 4000 "Quality Requirements" for submitting test and inspection reports, and schedule of tests and inspections.
5. Section 01 7700 "Closeout Procedures" for submitting closeout submittals and maintenance material submittals.
6. Section 01 7823 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
7. Section 01 7839 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

C. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.
1. Architect will provide Contractor with a user ID and password for access to Architect’s FTP site.

D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 SUBMITTAL SCHEDULE

A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.
   1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
   2. Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
      a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
   3. Format: Arrange the following information in a tabular format:
      a. Scheduled date for first submittal.
      b. Specification Section number and title.
      c. Submittal Category: Action; informational.
      d. Name of subcontractor.
      e. Description of the Work covered.
      f. Scheduled date for Architect's final release or approval.

1.5 SUBMITTAL FORMATS

A. Submittal Information: Include the following information in each submittal:
   1. Project name.
   2. Date.
   3. Name of Architect.
   4. Name of Contractor.
   5. Name of firm or entity that prepared submittal.
   6. Names of subcontractor, manufacturer, and supplier.
   7. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier; and alphanumeric suffix for resubmittals.
   8. Category and type of submittal.
   9. Submittal purpose and description.
   10. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
   11. Drawing number and detail references, as appropriate.
   12. Indication of full or partial submittal.
   13. Location(s) where product is to be installed, as appropriate.
   14. Other necessary identification.
   15. Remarks.
   16. Signature of transmitter.

B. Options: Identify options requiring selection by Architect.

C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect on

previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

D. PDF Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

1.6 SUBMITTAL PROCEDURES

A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
   1. FTP Site: Prepare submittals in PDF form, and upload to Architect's FTP Site. Enter required data on subject line to fully identify submittal.
      a. Architect will return annotated file. Annotate and retain one copy of file as a digital Project Record Document file.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
   2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
   3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
   4. Coordinate transmittal of submittals for related parts of the Work specified in different Sections so processing will not be delayed because of need to review submittals concurrently for coordination.
      a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
   1. Initial Review: Allow 15 working days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
   2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
   3. Resubmittal Review: Allow 15 working days for review of each resubmittal.
   4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated, allow 21 working days for initial review of each submittal.
   5. Concurrent Consultant Review: Where the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 15 working days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.
      a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Architect.

D. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
   1. Note date and content of previous submittal.
   2. Note date and content of revision in label or title block and clearly indicate extent of revision.

3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

E. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

F. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

1.7 SUBMITTAL REQUIREMENTS

A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:
   a. Manufacturer's catalog cuts.
   b. Manufacturer's product specifications.
   c. Standard color charts.
   d. Statement of compliance with specified referenced standards.
   e. Testing by recognized testing agency.
   f. Application of testing agency labels and seals.
   g. Notation of coordination requirements.
   h. Availability and delivery time information.
4. For equipment, include the following in addition to the above, as applicable:
   a. Wiring diagrams that show factory-installed wiring.
   b. Printed performance curves.
   c. Operational range diagrams.
   d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
5. Submit Product Data before Shop Drawings, and before or concurrent with Samples.

B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data unless submittal based on Architect's digital data drawing files is otherwise permitted.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
   a. Identification of products.
   b. Schedules.
   c. Compliance with specified standards.
   d. Notation of coordination requirements.
   e. Notation of dimensions established by field measurement.
   f. Relationship and attachment to adjoining construction clearly indicated.
   g. Seal and signature of professional engineer if specified.
2. Imperial Measure: Dimensions shall be in feet and inches, not metric.
3. BIM Incorporation: Develop and incorporate Shop Drawing files into BIM established for Project.

C. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other materials.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Permanently attach label on unexposed side of Samples that includes the following:
   a. Project name and submittal number.
   b. Generic description of Sample.
   c. Product name and name of manufacturer.
   d. Sample source.
   e. Number and title of applicable Specification Section.
   f. Specification paragraph number and generic name of each item.
3. Electronic Submittals: Provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record. Prepare submittals in PDF form, and upload to Architect's FTP Site. Enter required data on subject line to fully identify submittal.
4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
   a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
   b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
   a. Color Samples: Color samples shall not be photocopies or pdf files of manufacturer's color charts. Submit actual color chips or swatches showing color, texture, and pattern.
   b. Number of Samples: Submit one full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
   a. Color Samples: Color samples shall not be photocopies or pdf files of manufacturer's color charts. Submit actual color chips or swatches showing color, texture, and pattern.
   b. Number of Samples: Submit three sets of Samples. Architect will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a project record Sample.
      1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
      2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

D. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
2. Manufacturer and product name, and model number if applicable.
3. Number and name of room or space.
4. Location within room or space.

E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

F. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

G. Certificates:
1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
2. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
4. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
5. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.

H. Test and Research Reports:
1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
   a. Name of evaluation organization.
   b. Date of evaluation.
   c. Time period when report is in effect.
   d. Product and manufacturers' names.
   e. Description of product.
   f. Test procedures and results.
   g. Limitations of use.

1.8 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
   1. If criteria indicated are insufficient to perform services or certification required, submit a written request for additional information to Architect.
   2. Shop Drawings and calculations prepared by design professional under delegated design shall be sealed by a professional engineer registered in Massachusetts at the time of submission, unsealed drawings and calculations will be returned to the contractor un-reviewed.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF file and three paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
   1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

C. BIM Incorporation: Incorporate delegated-design drawing and data files into BIM established for Project.
   1. Prepare delegated-design drawings in the following format: Same digital data software program, version, and operating system as original Drawings.

1.9 CONTRACTOR'S REVIEW

A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp. Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
   1. Architect will not review submittals received from Contractor that do not have Contractor's review and approval.

1.10 ARCHITECT'S REVIEW

A. Action Submittals: Architect will review each submittal, indicate corrections or revisions required, and return it.
   1. PDF Submittals: Architect will indicate, via markup on each submittal, the appropriate action.

B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Architect will discard submittals received from sources other than Contractor.

F. Submittals not required by the Contract Documents will be returned by Architect without action.

G. Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

Section 013544 Unknown Existing Materials Procedures

PART 1 – GENERAL

1.0 RELATED DOCUMENTS: This section is only a portion of the Contract Documents. All of the Contract Documents, including conditions of the Contract and Division 1 General Requirements, apply to this section. This section applies to all specification sections and work of the Contract.

1 .01 SECTION INCLUDES: General requirements related to unknown existing materials.

A. Contractor's Responsibilities: If any existing material suspected of being hazardous is discovered:
   1. Notify the Owner.
   2. Protect workers and the public from exposure to the unknown material.
   3. Prevent disturbance of the unknown material.
   4. Redirect work to other locations to maintain project progress and to avoid delays.
   5. Allow 15 business days for the Owner's investigation and, if necessary, remediation.

B. Owners Responsibilities:
   1. Employ an independent agency to investigate the unknown condition.
   2. Provide certified report to the Contractor stating results of the investigation.
   3. Take action to remove, abate, encapsulate, or remediate hazardous conditions, if any.
   4. Complete investigation and remediation within 15 business days after Contractor's notification.

End of Section

Section 01 3545 Existing Paint Containing Lead

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. The procedures described herein apply to all lead paint abatement and demolition work where a worker may be occupationally exposed to lead as well as to the disposal of the abatement and/or demolition debris. The Contractor shall assume that any painted surface not tested under this specification where work will occur contains lead paint and it shall be the Contractor's responsibility to protect workers performing under this Contract.

B. The Contractor shall assume full responsibility and liability for compliance with all applicable Federal, State and local regulations pertaining to work practices, hauling and disposal of hazardous waste, and the protection of workers and visitors to the site and persons occupying areas adjacent to the site.

C. The Contractor is required to ensure the protection of workers performing any related renovation or demolition work that will affect surfaces coated with lead-based paint as well as protecting the public and the environment from exposure to lead dust.

D. Contractor responsibilities established in this section include the furnishing of all labor, materials and equipment required to remove, contain, recover, and dispose of lead coatings and associated waste as called out in these specifications.

1. Removal of paint from structural steel, where cutting/grinding is necessary;

2. Spot removal of paint from surfaces to facilitate demolition or renovation;

3. Removal of all temporary containment system structures daily, or as allowed by the Engineer;

4. Testing and disposal of all abatement or demolition debris generated as a result of lead coatings removal and demolition in accordance with requirements of this specification and Federal and State regulations on hazardous and solid waste;

5. Personal air sampling as required by OSHA for workers of the Contractor that have the potential for exposure to airborne lead dusts as outlined in this specification.

E. Codes and Standards

1. All work shall conform to the standards set by applicable Federal, State, and local laws, regulations, ordinances, and guidelines in such form in which they exist at the time of the work on the contract and as may be required by subsequent regulations.

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2. In addition to any detailed requirements of the Specifications, the Contractor shall at his own cost and expense comply with all laws, ordinances, rules and regulations of Federal, State, Regional and Local Authorities regarding handling and storing of lead waste material.

3. The following references are cited as applicable standard and regulations as amended:

a. Code of Federal Regulations (CFR) Publications:

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926.55	Gases, Vapors, Fumes, Dusts and Mists

29 CFR 1926.57	Ventilation
29 CFR 1926.62	Lead in Construction
29 CFR 1926.200	Signs, Signals and Barricades
29 CFR 1926.354	Welding, Cutting and Heating in Way of Preserving Coatings
29 CFR Subpart T	Demolition
40 CFR 50	National Primary and Secondary Ambient Air Quality Standards for Lead
40 CFR 61	Subpart A General Provisions
40 CFR 61.152	Standard for Waste Manufacturing, Demolition, Renovation, Spraying and Fabricating Operations
40 CFR 241	Guidelines for the Land Disposal of Solid Waste
40 CFR 257	Criteria for Classification of Solid Waste
40 CFR 261 and 262	Waste Disposal Facilities and Practices

b. Massachusetts Regulations:

454 CMR 23.00	Occupational Lead Exposure

c. American National Standards Institute (ANSI) Publications:

29.2-79	Fundamentals Governing the Design and Operation of Local Exhaust Systems
288.2-80	Practices for Respiratory Protection

d. National Institute of Occupational Safety and Health (NIOSH) Publications:

Manual of Analytical Methods, 4th Edition

e. Underwriters Laboratories, Inc. (UL) Fire Resistance Directory Publications:

586-77 (R 1982)	Test Performance of High-Efficiency Particulate Air Filter Units

F. All regulations by the above and other governing agencies in their most current versions are applicable throughout this project. Where there is a conflict between this Specification and the cited Federal, State, or local regulations, the more restrictive or stringent requirements shall prevail.

1.02 DEFINITIONS

A. The following definitions apply to the performance of the work of this project:

1. Action Level: An airborne concentration of lead above 30 micrograms per cubic meter ($\mu g/m^3$) as a Time-Weighted Average (TWA) for more than 30 days per year.

2. Area Monitoring: Sampling of lead concentrations within the abatement or demolition work area and outside the work area which is representative of the airborne concentration of lead.

3. Clean Room: An uncontaminated change room directly adjacent to the work area having facilities for storage of employees' personal clothing and uncontaminated work clothes, materials and equipment provided when the airborne exposure to lead is above the PEL.

4. Abatement or Demolition Contractor: The Sub-Contractor who is performing abatement of lead-based paint or demolition involving lead-based paint under this Section.

5. Decontamination Area: A contained area adjacent to or connected to the abatement work area and consisting of an equipment room, shower area, and clean room which is used for decontamination of workers, materials and equipment.

6. Hazardous Waste: Abatement or demolition debris which when tested equals or exceeds the Toxicity Characteristic Leachate Procedure (TCLP) standard for lead of 5.0 milligrams per liter.

7. HEPA Filter Equipment - High efficiency particulate air (HEPA) filtered vacuuming or exhaust ventilation equipment with a UL 586 filtration system. Filters shall be of 99.97 percent efficiency for retaining 0.3 micrometer diameter particles as determined by DOP testing.

8. Lead Containing Paint or Coating: Paint, varnish, or stain which contains lead in excess of 0.0 milligrams per square centimeter (mg/cm^2) or 0.0% lead by weight.

9. Lead Permissible Exposure Limit (PEL): 50 $\mu g/m^3$ of air, based upon an 8-hour time weighted average.

10. PM-10 Sampling: Sampling for suspended particulate matter less than 10 microns in aerodynamic diameter.

11. Sample Location: Area or place where air sample is collected.

12. Surface Preparation: Paint removal such that metal surfaces are free of visible paint chips, dirt, and rust where cutting, torching, welding, etc. may be required to facilitate abatement or demolition.

13. Time Weighted Average (TWA): The TWA is an 8-hour time weighted average for the test of the concentration of lead for worker exposure.

14. TSP Sampling for Lead: Sampling for airborne total suspended particulate lead analysis.

15. Wet Cleaning: The process of removing lead contamination from building surfaces, equipment and other objects by using cloths, mops, or other cleaning tools which have been dampened with water, and by afterwards disposing of these cleaning tools as lead contaminated wastes.

16. Work Area: A controlled-access work area which has no plastic sheeting or other containment barriers erected to separate the trades.

1.03 SUBMITTALS

A. Notifications

1. The Contractor shall provide in proper and timely fashion, all necessary notifications to relevant federal, state, and local authorities and obtain and comply with provisions of all permits or applications required by the work specified, as well as make all required submittals required under those auspices. Costs for all permits, applications, and approvals are to be assumed by Contractor. Required notifications include but are not limited to the following:

a. Massachusetts Department of Environmental Protection, Form AQ-O6 - Construction/Demolition Notification.

B. The Contractor shall provide five (5) copies of the following Submittals at the pre-construction Conference for the review of the Architect-Engineer:

1. Copies of all notifications, permits, applications, licenses and other documents required by Federal, State, or local regulations and this specification obtained or submitted.

2. Copies of written medical opinions for each employee who may be occupationally exposed to lead as required by 29 CFR 1926.62(j)(3)(v).

3. Copies of supervisors' and workers' training certificates.

4. Record of successful respirator fit testing performed by a qualified individual within the previous 6 months for each employee to be used on this project with the employee's name and social security number with each record.

5. Contractor's Lead Compliance Program as required by 29 CFR 1926.62, including proposed respiratory protection program and medical monitoring for all employees throughout all phases of the job, including make, model and NIOSH approved numbers of respirators to be used; worker orientation plan; written description of all proposed procedures, methods, or equipment to utilized, including those that may differ from the Contract Specifications. In all instances, Contractor must comply with all applicable Federal, State and local regulations.

6. Proposed number and type (i.e. hazardous waste or non-hazardous waste, open top, front loading, etc.) of dumpsters for waste, proposed location(s).

7. A list of all equipment to be used on site, by make and model.

8. Details of any proposed work platforms and or containment system design features.

9. Chain of Command of responsibility at work site including supervisors and competent person, their names, resumes and certificates of training and phone numbers.

10. List of total number of supervisors and workers intended to be assigned to the project, including name and lead awareness qualifications.

11. Material Safety Data Sheets on potentially hazardous materials to be used on the project.

12. Waste Disposal Plan which describes the waste stream, anticipated quantities, and the disposal means (i.e. landfill, recycle, etc.), and includes the name, address, and ID number of the proposed hazardous waste hauler, waste transfer route, and proposed disposal reclamation or treatment facility.

13. Name and address of the proposed construction debris disposal site.

14. Construction schedule including sequence of critical work.

15. No work of the project will be allowed to begin until the Pre-Construction Submittals as listed herein are accepted by University and Engineer. Any delay caused by the Contractor's refusal to submit this documentation in a timely fashion.

C. Submit the following to the Architect-Engineer as a Post-Construction submittal package:

1. Copies of waste manifests and receipts acknowledging disposal of all lead waste material from the project, showing delivery date, quantity, and appropriate signature of landfills authorized representative.

2. DEP approval for all waste reduction techniques, if utilized.

3. A notarized copy of the daily list of workers and site entry-exit logbook.

4. All personnel monitoring results.

5. All TCLP testing results.

1.04 GENERAL WORK PROCEDURES

A. Contractor must coordinate the work of this Section with the work of all other trades.

B. The working hours for this project are set forth in Division I and the General Requirements.

1.05 SPECIAL CONSIDERATIONS

A. The Contractors shall follow the requirements of this Section regarding component abatement, removal, demolition, worker exposure and protection, work area cleaning, and waste disposal.

B. Work Affected - In general, the following activities are minimum requirements of this Section and affect the removal of lead-based paint from components slated for demolition or renovation:

1. No torch cutting, mechanical sanding or stripping or abrasive methods for paint removal shall occur without the use of HEPA vacuum attachments.

2. No abatement or demolition activities may occur that increases the workers' exposure above the Action Level of 30 $\mu g/m^3$. Contractor shall fully comply with the OSHA lead standard at 29 CFR 1926.62.

3. Workers shall be informed of the components to be demolished that have been identified as containing lead.

4. Worker protection, at a minimum, shall comply with the OSHA Lead Standard 29 CFR 1926.62. Worker Right to Know and Health and Safety Standards of 1926.62 shall also apply to the work of this Section.

5. Separation of Trades: Unprotected, untrained workers or trades shall not perform any related work within the same vicinity as abatement or demolition involving components identified as containing lead.

6. Cleanup Activities: The Contractor shall maintain work zones free of accumulated debris and paint chips from abatement or demolition involving lead.

1.06 FEES, PERMITS & LICENSES

A. The Contractor shall be responsible for costs for all licensing requirements, where applicable and notification requirements and all other fees related to the Contractor's ability to perform the work in this Section.

B. The Contractor shall secure all necessary permits for work under this Section, including hauling, removal, and disposal, fire, and materials usage, or any other permits required to perform the specified work.

1.07 CLEAN-UP

A. The Contractor shall maintain the work site in a neat and orderly manner at all times, so as not to interrupt or infringe upon the work of other trades.

B. The Contractor shall comply with all requirements for release of work areas as described in the project specification.

1.08 COORDINATION

A. Phasing and scheduling of this project will be subject to the approval of the Architect-Engineer. The work of this Section shall be scheduled and performed so as not to impede the progress of the project as a whole. Work shall no proceed in any area without the express consent of the Architect-Engineer. The Contractor shall be available with 24 hours notice for additional work if after acceptance of the work it is found that complete abatement or demolition was not achieved from the initial work effort as determined by the Architect-Engineer.

B. The proposed schedule for the work in this Section shall show the time involved from start to finish of abatement or demolition operations, including preparation, removal, clean-up, Engineer's inspections and demobilization portions of the job.

C. A final schedule shall then be prepared and coordinated with the Architect-Engineer and the Contractor. The final scheduling shall be submitted in writing prior to the commencement of work.

D. Inspections by Architect-Engineer: The Architect-Engineer may perform visual inspections during the work of this Section, as described below. The Contractor shall not proceed with work until the Contractor has received the Engineer's approval at the stages identified below.

1. During: Prior to the commencement of a proposed alternative method other than specified.

2. Post Inspection: At the completion of work and final clean-up, prior to clearance or removal of any critical barriers and decontamination unit from the work area.

3. Waste Removal Inspection: Prior to removal of hazardous waste from the site, the University and Engineer will inspect the quantity and type.

1.09 AUTHORITY TO STOP WORK

A. The Architect-Engineer has the authority to stop the work at any time the Architect-Engineer determines either personally or through the services of the Architect-Engineer that conditions are not within the specifications and applicable regulations. The stoppage of work shall continue until conditions have been corrected and corrective steps have been taken to the satisfaction of the Engineer. Standby time required to resolve violations shall be at the Contractor's expense, and shall not be cause for extending the completion date.

1.10 EMERGENCY PRECAUTIONS

A. The Contractor shall establish emergency and fire exits from the work area.

B. When an injury occurs, the Contractor shall stop work until the injured person has been removed from the work area.

1.11 DISPOSAL OF WASTE MATERIAL

A. General

1. The Abatement or Demolition Contractor and transporting Contractor will be required to comply with the Resource Conservation and Recovery Act (RCRA) and with all applicable State and local regulations.

2. The Abatement or Demolition Contractor shall be responsible for disposing all wastes determined by Toxicity Characteristic Leachate Procedure (TCLP) to be hazardous. If TCLP testing has not been performed, the Demolition Contractor shall be responsible for testing the waste and the costs associated with the testing and analysis.

3. The Abatement or Demolition Contractor shall comply with all EPA regulations.

4. The cost for the proper disposal of all waste of this project shall be included in the base bid and shall be disposed of according to 40 CFR 241, 261, and 262.

5. The cost for the disposal as hazardous waste shall include all fees, permits, labor, materials, profit, overhead, waste transfer costs, and all other costs incidental of hazardous disposal. Also included shall be the cost for all storage dumpsters, permit fees, transport, treatment (on-site or off-site), additional testing and disposal fees.

6. The Contractor shall salvage (scrap) all metal components removed under this Contract, and shall submit proof of delivery to a salvage facility.

PART 2 - PRODUCTS

2.01 GENERAL

A. The Contractor shall deliver all materials and equipment to the site in the original containers bearing the name of the manufacturer, and details for proper storage and use.

B. All materials or equipment delivered to the site shall be unloaded, temporarily stored, and transferred to the work area in a manner which shall not interfere with other trades working in the area.

C. Unloading and temporary storage sites, and transfer routes, must be approved in advance by the Architect-Engineer.

D. Damaged or deteriorated materials may not be used and must be promptly removed from the premises. Material which becomes contaminated shall be packaged and legally disposed in an approved, secure landfill.

2.02 MATERIALS

A. All materials and equipment proposed to be used on this project shall be subject to the acceptance of the Architect-Engineer. The list of required materials shall include, but not be limited to the following:

1. Fire retardant polyethylene sheeting, minimum thickness of six (6) mil.

2. Plastic bags, minimum thickness of six (6) mil.

3. Duct Tape, up to 3-inch width.

4. Lead Warning Signs, as required by the DEWD Regulations, and OSHA Hazard Communication requirements.

5. Flexible duct for ventilation units (if required).

6. Fire retardant spray adhesive.

7. Personal Protective Equipment, NIOSH approved respirators.

8. Ventilation units with HEPA filtration and exhaust fans.

9. HEPA vacuums.

10. Trisodium Phosphate (TSP) and product data.

11. Cloth tarpaulin.

2.03 TOOLS AND EQUIPMENT

A. Transportation Equipment; transportation equipment, as required, shall be suitable for loading, temporary storage, transporting, and unloading waste without exposure to persons or property. All over-the-road transportation equipment must carry the appropriate hazardous waste transport licenses and insurance.

B. Vacuum Equipment: All vacuum equipment utilized in the work area shall use HEPA filtration systems.

C. Water Sprayer: The water sprayer shall be an airless or other low pressure sprayer for water application.

D. Other Tools and Equipment: The Contractor shall provide other suitable tools including but not limited to: rounded edge shovels, rakes, brooms, and carts.

E. The Contractor shall provide ground fault circuit interrupters (GFCIs) to protect all electrical cords and connections.

F. Approved lighting equipment for use in the work area.

G. Scaffolding: Scaffolding, as required to accomplish specified work, shall meet all applicable Federal, State and local safety regulations and shall be used in accordance with the manufacturer's specifications.

PART 3 - EXECUTION

3.01 SCHEDULING

A. The Contractor shall coordinate all scheduling with the Architect-Engineer.

3.02 UTILITIES

A. The Contractor shall provide all necessary connections for temporary utilities in the workplace during work. The Contractor shall shut down and disconnect all electrical power to the work area so that there is no possibility of reactivation and electrical shock during the work. The temporary electrical power shall be connected in accordance with all OSHA requirements.

3.03 IDENTIFICATION OF HAZARDS

A. Prior to any work involving lead containing items, the Contractor shall identify all work activities in which a worker may be occupationally exposed to lead.

B. The Contractor shall initially determine if any worker may be exposed to lead above the Action Level.

3.04 ISOLATION OF WORK AREAS AND INSTALLATION OF DECONTAMINATION FACILITIES

A. Containment controls, including critical barriers, protective coverings, HEPA-filtered ventilation and decontamination facilities, may be required for paint removal work. The degree of containment shall be appropriate for the anticipated levels of airborne lead dust.

B. Work Area Isolation (unless exempted according to Paragraph A):

1. The Contractor shall isolate work areas for the duration of the work by completely sealing off all openings in the work area. Isolation sealing shall be accomplished by constructing critical barriers where necessary around the work area perimeter. The work area shall be sealed airtight to the greatest extent possible, subject to the approval of the Engineer.

2. The Contractor shall provide temporary power and lighting (with GFCI protection) to the work areas, and ensure safe installation of temporary power sources and equipment per applicable electrical code requirements, and OSHA requirements for temporary lighting in the environment normal to lead-based paint abatement work areas.

C. Equipment and Services: The Contractor shall provide portable lighting, staging and scaffolding, utility hook-ups, portable fire extinguishers, first aid equipment, and all other equipment or items for the safe and efficient performance of work.

D. Decontamination Facility:

1. The Contractor shall erect one or more Decontamination Facilities (if applicable) to serve each work area. The facility will consist of a series of two or more connected chambers including, at a minimum, a clean room and a shower/wash room, separated by an air lock. Unless otherwise specified, the shower/wash room shall be contiguous to the work area. Non-contiguous, remote, three-chamber decontamination facilities may be substituted with the Engineer's written approval. Three-chamber decontamination facilities shall include an equipment room to be used for removal and temporary storage of contaminated worker

clothing, equipment, and other items leaving the work area, prior to decontamination in the shower/wash room of the decontamination facility.

2. In all cases, non-emergency access between contaminated and uncontaminated rooms of areas shall only be through the Decontamination Facility/Wash Room.

3. The Contractor shall ensure that barriers and linings are effectively sealed and taped at all times, and that the shower/wash room floor is completely watertight. The Contractor shall visually inspect enclosures at the beginning of each work period. The Contractor shall repair damaged barriers, and remedy defects immediately upon discovery.

E. All lead in abatement or demolition work areas shall remain isolated from all other trades on the project and remain inaccessible to the public. Contractor shall monitor the access to the abatement or demolition work areas. The below listed items are required to control the generation of lead-containing dust during abatement or demolition activities. The Contractor is ultimately responsible for cleaning all generated dust and paint debris from abatement or demolition operations and must maintain work areas free from lead dust generated from abatement or demolition activities.

1. Signs shall be posted at all approaches to the work area warning that work involving lead is being conducted in the vicinity. Signs shall be in bold lettering not smaller than two inches tall.

2. Barriers shall not be removed until the work areas are thoroughly cleaned and approved by the Engineer.

3.05 APPROVALS AND INSPECTION

A. All temporary work facilities, work procedures, equipment, materials, services, and agreements must strictly adhere to and meet this Section along with EPA and OSHA regulations and recommendations as well as Federal, State and local regulations. Where there exists overlap of these regulations, the most stringent one will apply. All work performed by the Contractor is further subject to approval of the Architect-Engineer.

3.06 PERSONNEL SAMPLING - CONTRACTOR

A. The Contractor shall employ a Certified Industrial Hygienist to perform personnel air sampling during all abatement or demolition work to determine worker exposure limits. The results of such sampling shall be posted, provided to individual workers, and submitted to the Architect-Engineer.

B. Provide sampling to check personal exposure levels. Representative sampling shall be taken for the duration of the work shift or for eight hours, whichever is less. Personal samples need not be taken for repeated working conditions if working conditions remain unchanged, but must be taken every time there is a change in the removal operation, either in terms of the location or the type of work. Sampling will be used to determine eight-hour time-weighted averages (TWAs). Personnel sampling shall be conducted as outlined in OSHA Standard 29 CFR 1926.62.

C. Air sampling results shall be transmitted to the Architect-Engineer and available to individual workers at the job site no more than forty-eight (48) hours after the completion of a sampling cycle. The reporting document shall list each sample's result, sampling time and date, personnel monitored and the flow rate, sample duration, sample yield, cassette size, and the analyst's name and company,

and shall include an interpretation of the results. Air sample analysis results will be reported in micrograms per cubic meter (µg/m^3).

D. The Contractor's testing lab shall be AHA accredited for analysis of metals. Contractor shall submit for Architect-Engineer's review and acceptance the name and address of the laboratory, certification of AHA accreditation for metals analysis, listing of relevant experience in air lead analysis, and presentation of a documented Quality Assurance and Quality Control program.

E. Air monitoring frequency will be established in accordance with the requirements set forth in 29 CFR 1926.62.

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3.07 ENVIRONMENTAL IMPACT TESTING AND INSPECTIONS

A. Ambient Air Monitoring:

1. The Contractor shall be responsible for performance of all ambient air monitoring requirements in accordance with 40 CFR 50.12, "National Primary and Secondary Ambient Air Quality Standards for Lead". The Contractor shall be responsible for retaining a qualified Industrial Hygiene firm for performance of the ambient air monitoring services.

2. Air concentrations of lead particulate will be measured using High Volume sampling for Total Suspended Particulate (TSP). The concentration of 10-micron size lead and particulate matter (PM-10), as measured by High volume PM-10 samplers, shall not exceed standards set in 40 CFR 50.12 "National Primary and Secondary Ambient Air Quality Standards for Lead".

3. Ambient air monitoring during the work of this project shall be assessed using PM-10 and TSP for Lead high volume samplers as follows:

   a. Background Analysis (prior to the start of work)

   b. During abatement or demolition

4. All PM-10 samples shall be analyzed in accordance with 40 CFR, Part 50, Appendix G and TSP for lead samples shall be analyzed in accordance with 40 CFR, Part 50, Appendix J.

5. All sample results shall be posted at the site within 48 hours of the conclusion of sample collection, excluding weekends or holidays.

6. In the event TSP for Lead emissions exceed 13.5 µg/m^3 or the PM-10 emissions exceed 450 µg/m^3, the job shall be shut down until a corrective procedure can be implemented, authorized by the University's representative(s).

B. After a thorough clean-up, the Architect-Engineer will visually inspect the work area in order to look for any visible debris or contamination. If the visual inspection does not reveal any debris or signs of contamination, the area shall be cleared.

3.08 WORK PROCEDURES

A. The Contractor shall initiate and continue sufficient engineering and work practice controls, as described in the Contractor's Lead Compliance Program, to reduce and maintain worker exposures to lead at or below the Action Level.

B. The following work practices are specifically required by these specifications:

1. All persons except those directly involved in the work shall be excluded from the work area. Physical barriers shall be used, where necessary, to limit access to the work area for the duration of the abatement or demolition operations. Warning signs may be posted in accordance with applicable regulations.

2. The Contractor shall provide hand-washing facilities and assure that all workers thoroughly wash their hands and face upon exiting the work area. Workers shall pay careful attention to cleanse the hands and face when decontaminating. The Contractor shall provide additional hygiene facilities, including showers, as required based on initial assessment and continued monitoring.

3. Thoroughly wet the areas to be demolished and mist the air to reduce the potential for creating airborne lead and dust.

4. All equipment used by the workers inside the work area shall be either left in the work area or thoroughly decontaminated before being removed from the work area. Extra work clothing (in addition to the disposable suits supplied by the Contractor) shall be left in the clean area until the completion of work in that area. The clean area shall be cleaned of all visible debris and disposable materials daily.

5. Under no circumstances shall workers or supervisory personnel eat, drink, smoke, chew gum, or chew tobacco in the work area; to do so shall be grounds for the Engineer or Engineer to stop all lead paint abatement and/or demolition operations. Only in the case of life-threatening emergency shall workers or supervisory personnel be allowed to remove their protective respirators while in the work area. In this situation, respirators are to be removed for as short a duration as possible.

3.09 ABATEMENT OR DEMOLITION PROCEDURES

A. Feasible engineering controls shall be implemented by the Contractor as described in the Contractor's Lead Compliance Program to minimize the possibility of contamination of areas adjacent to the work area. The following activities are the minimum requirements of this Section and affect the abatement or demolition performed on the painted components.

1. No torch cutting, mechanical sanding or stripping or abrasive methods shall be used without the use of HEPA vacuum attachments.

2. No abatement or demolition activities may occur which increase the workers exposure above the Action Level of 30 $\mu g/m^3$. The Contractor shall fully comply with the OSHA lead standard 29 CFR 1926.62.

B. Workers shall be informed of the components to be demolished that are identified as containing lead.

C. Where the cutting of structural steel is necessary, the existing painted metal surface shall be prepared such that the metal surfaces are made free of visible paint chips for the specified cutting to take place.

D. The Contractor is directed to use pressurized water jetting to remove lead-based paint whenever possible. The alternate methods listed below, or any alternative surface abatement technologies (e.g. air abrasive wet blasting, surface encapsulation epoxy treatment) shall be restricted for use only with the prior written consent of the Engineer.

1. Hand and Power Tool Cleaning: Use of hand and HEPA-attached power operated wire brushed, scrapers, vacuums, grinders, or other appropriate devices.

2. Vacuum Blasting: Use of blast cleaning technology abrasives propelled across a surface using compressed air associated with a special vacuum assembly which forms a seal at the treated surface to create a dosed blasting cycle. The abrasive (e.g. cast steel, malleable iron, or aluminum oxide) is automatically recirculated, cleaned of debris, and returned for reuse.

3. Wheel Blast Cleaning: Use of blast cleaning technology that propels abrasive to the surface using centrifugal force. This method also requires a special vacuum assembly and a seal at the treated surface to create a closed blasting cycle. The abrasive (e.g. cast steel, malleable iron, or chilled cast iron) is automatically recirculated, cleaned of debris, and returned for reuse.

4. Chemical Stripping: Use of a chemical paste containing alkaline or acidic solvent materials. The paste may be troweled or spray-applied to surfaces and covered with polyethylene sheeting. Paint will be absorbed by the paste which bonds to the polyethylene sheeting. The paint, paste, and sheeting is stripped away in a single step.

E. All debris generated as a result of paint removal activities shall either be collected immediately at the point of cleaning (e.g. with an attached HEPA vacuum assembly), or from contaminated work area surfaces at regular intervals during each work shift.

F. Separation of Trades: Unprotected, untrained workers or trades shall not perform any related work within the same areas as abatement or demolition involving components identified as containing lead. Other trades may not enter these areas until clean-up procedures are completed.

3.10 STORAGE OF WASTE

A. Use of waste containers on site shall be controlled under the following requirements:

1. Location of waste containers on site shall be coordinated with the Contractor, subject to the Architect-Engineer.

2. The waste containers shall be lined with two layers of six-mil polyethylene sheeting, be solid, enclosed containers, locked and sealed at all times. This requirement applies to waste classified as hazardous based on TCLP testing.

3. Removal of surface preparation debris from each work area into suitable storage containers must be carried out without releasing lead or other wastes into the environment. The Contractor shall coordinate with regional EPA, State, and local authorities to assure compliance with lead-based paint debris disposal requirements. During the actual abatement, the Contractor shall not incinerate debris, dump waste by the road or in an unauthorized dumpster, or introduce lead-contaminated water into storm drain.

4. The Contractor shall comply with all Federal, State, and local regulations and ordinances regarding lead waste storage.

3.11 DISPOSAL OF NON-CONTAMINATED WASTE

A. All non-contaminated waste materials resulting from temporary facilities or abatement work, except as specified otherwise, shall become the property of the Contractor and shall be disposed of as specified herein.

B. Remove from the site all non-contaminated debris and rubbish resulting from demolition operations. Burning of removed materials from demolished areas will not be permitted. Transport materials removed from demolished areas and dispose of off site in a legal manner.

C. During progress of work, clean site and public properties, and dispose of waste materials, debris, and rubbish. Provide on-site containers for collection of waste materials, debris, and rubbish. Remove waste materials, debris, and rubbish daily from site and legally dispose of at public or private dumping areas off owner's property.

3.12 FINAL CLEAN UP

A. Repair, patch, and touch-up marred surfaces to specified finish, to match adjacent surfaces. Employ experienced workers or professional cleaners for final cleaning. Remove grease, dust, dirt, stains, labels, fingerprints and other foreign materials.

B. Broom clean paved surfaces; rake clean other surfaces of grounds. Remove waste materials, rubbish, tools, equipment, machinery, and surplus materials, and clean all exposed-to-view surfaces; leave site clean and ready for occupancy or use.

END OF SECTION

Section 01 4200 References

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."

D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

A. Applicability of Standards: Unless 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 standards in effect as of date of the Contract Documents unless otherwise indicated.

C. Copies of Standards: Each entity engaged in construction on Project should 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, obtain copies directly from publication source.

1.4 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
   1. AABC - Associated Air Balance Council; www.aabc.com.
   2. AAMA - American Architectural Manufacturers Association; www.aamanet.org.
   3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
   4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
   5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
   6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
   7. ABMA - American Boiler Manufacturers Association; www.abma.com.
   8. ACI - American Concrete Institute; (Formerly: ACI International); www.concrete.org
   9. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.
   10. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
   11. AF&PA - American Forest & Paper Association; www.afandpa.org.
   12. AGA - American Gas Association; www.aga.org.
   13. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
   14. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
   15. AI - Asphalt Institute; www.asphaltinstitute.org.
   16. AIA - American Institute of Architects (The); www.aia.org.
   17. AISC - American Institute of Steel Construction; www.aisc.org.
   18. AISI - American Iron and Steel Institute; www.steel.org.
   19. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
   20. ANSI - American National Standards Institute; www.ansi.org.
   21. AOSA - Association of Official Seed Analysts, Inc.; www.aosaseed.com.
   22. APA - APA - The Engineered Wood Association; www.apawood.org.
   23. APA - Architectural Precast Association; www.archprecast.org.
   24. ASCE - American Society of Civil Engineers; www.asce.org.
   25. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
   26. ASME - ASME International; (American Society of Mechanical Engineers); www.asme.org.
   27. ASSE - American Society of Safety Engineers (The); www.asse.org.
   28. ASSE - American Society of Sanitary Engineering; www.asse-plumbing.org.
   29. ASTM - ASTM International; www.astm.org.
   30. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
   31. AWI - Architectural Woodwork Institute; www.awinet.org.
   32. AWPA - American Wood Protection Association; www.awpa.com.
   33. AWS - American Welding Society; www.aws.org.
   34. AWWA - American Water Works Association; www.awwa.org.
   35. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
   36. BIA - Brick Industry Association (The); www.gobrick.com.
   37. BICSI - BICSI, Inc.; www.bicsi.org.

38. BWF - Badminton World Federation; (Formerly: International Badminton Federation); www.bissc.org.
39. CDA - Copper Development Association; www.copper.org.
40. CEA - Consumer Electronics Association; www.ce.org.
41. CFFA - Chemical Fabrics and Film Association, Inc.; www.chemicalfabricsandfilm.com.
42. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
43. CGA - Compressed Gas Association; www.cganet.com.
44. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
45. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
46. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
47. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
48. CPA - Composite Panel Association; www.pbmdf.com.
49. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
50. CRRC - Cool Roof Rating Council; www.coolroofs.org.
51. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
52. CSA - CSA International; (Formerly: IAS - International Approval Services); www.csa-international.org.
53. CSI - Construction Specifications Institute (The); www.csinet.org.
54. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.cti.org.
55. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
56. DHI - Door and Hardware Institute; www.dhi.org.
57. ECIA - Electronic Components Industry Association; www.eciaonline.org.
58. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
59. ESD - ESD Association; (Electrostatic Discharge Association); www.esda.org .
60. ETL - Intertek (See Intertek); www.intertek.com.
61. EVO - Efficiency Valuation Organization; www.evo-world.org.
62. FCI - Fluid Controls Institute; www.fluidcontrolsinstitute.org.
63. FM Approvals - FM Approvals LLC; www.fmglobal.com.
64. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.
65. FSA - Fluid Sealing Association; www.fluidsealing.com.
66. FSC - Forest Stewardship Council U.S.; www.fscus.org.
67. GA - Gypsum Association; www.gypsum.org.
68. GANA - Glass Association of North America; www.glasswebsite.com.
69. GBCI - Green Building Certification Institute; http://www.gbci.org
70. GS - Green Seal; www.greenseal.org.
71. HI - Hydraulic Institute; www.pumps.org.
72. HPVA - Hardwood Plywood & Veneer Association; www.hpva.org.
73. HPW - H. P. White Laboratory, Inc.; www.hpwhite.com.
74. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
75. IAS - International Accreditation Service; www.iasonline.org.
76. ICC - International Code Council; www.iccsafe.org.
77. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
78. ICPA - International Cast Polymer Alliance; www.icpa-hq.org.
79. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
80. IEC - International Electrotechnical Commission; www.iec.ch.
81. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
82. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
83. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
84. IGMA - Insulating Glass Manufacturers Alliance; www.igmaonline.org.
85. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.
86. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.

87. ISO - International Organization for Standardization; www.iso.org.
88. ITU - International Telecommunication Union; www.itu.int/home.
89. MBMA - Metal Building Manufacturers Association; www.mbma.com.
90. MCA - Metal Construction Association; www.metalconstruction.org.
91. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
92. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
93. MIA - Marble Institute of America; www.marble-institute.com.
94. MMPA - Moulding & Millwork Producers Association; www.wmmpa.com.
95. MPI - Master Painters Institute; www.paintinfo.com.
96. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.
97. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
98. NACE - NACE International; (National Association of Corrosion Engineers International); www.nace.org.
99. NADCA - National Air Duct Cleaners Association; www.nadca.com.
100. NAIMA - North American Insulation Manufacturers Association; www.naima.org.
101. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
102. NBI - New Buildings Institute; www.newbuildings.org.
103. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
104. NCMA - National Concrete Masonry Association; www.ncma.org.
105. NEBB - National Environmental Balancing Bureau; www.nebb.org.
106. NECA - National Electrical Contractors Association; www.necanet.org.
107. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
108. NEMA - National Electrical Manufacturers Association; www.nema.org.
109. NETA - InterNational Electrical Testing Association; www.netaworld.org.
110. NFHS - National Federation of State High School Associations; www.nfhs.org.
111. NFPA - National Fire Protection Association; www.nfpa.org.
112. NFRC - National Fenestration Rating Council; www.nfrc.org.
113. NHLA - National Hardwood Lumber Association; www.nhla.com.
114. NLGA - National Lumber Grades Authority; www.nlga.org.
115. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
116. NRCA - National Roofing Contractors Association; www.nrca.net.
117. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
118. NSF - NSF International; www.nsf.org.
119. NSPE - National Society of Professional Engineers; www.nspe.org.
120. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
121. NWFA - National Wood Flooring Association; www.nwfa.org.
122. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
123. PDI - Plumbing & Drainage Institute; www.pdionline.org.
124. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); http://www.plasa.org.
125. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
126. RFCI - Resilient Floor Covering Institute; www.rfci.com.
127. SAE - SAE International; www.sae.org.
128. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
129. SDI - Steel Deck Institute; www.sdi.org.
130. SDI - Steel Door Institute; www.steeldoor.org.
131. SEFA - Scientific Equipment and Furniture Association (The); www.sefalabs.com.
132. SIA - Security Industry Association; www.siaonline.org.
133. SJI - Steel Joist Institute; www.steeljoist.org.
134. SMA - Screen Manufacturers Association; www.smainfo.org.
135. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
136. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.

137. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
138. SPIB - Southern Pine Inspection Bureau; www.spib.org.
139. SPRI - Single Ply Roofing Industry; www.spri.org.
140. SRCC - Solar Rating & Certification Corporation; www.solar-rating.org.
141. SSINA - Specialty Steel Industry of North America; www.ssina.com.
142. SSPC - SSPC: The Society for Protective Coatings; www.sspc.org.
143. STI - Steel Tank Institute; www.steeltank.com.
144. TCNA - Tile Council of North America, Inc.; www.tileusa.com.
145. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.tema.org.
146. TIA - Telecommunications Industry Association (The); (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.
147. TMS - The Masonry Society; www.masonrysociety.org.
148. TPI - Turfgrass Producers International; www.turfgrasssod.org.
149. UL - Underwriters Laboratories Inc.; http://www.ul.com.
150. UNI - Uni-Bell PVC Pipe Association; www.uni-bell.org.
151. USAV - USA Volleyball; www.usavolleyball.org.
152. USGBC - U.S. Green Building Council; www.usgbc.org.
153. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
154. WASTEC - Waste Equipment Technology Association; www.wastec.org.
155. WCLIB - West Coast Lumber Inspection Bureau; www.wclib.org.
156. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
157. WDMA - Window & Door Manufacturers Association; www.wdma.com.
158. WWPA - Western Wood Products Association; www.wwpa.org.

B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.
1. DIN - Deutsches Institut fur Normung e.V.; www.din.de.
2. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
3. ICC - International Code Council; www.iccsafe.org.
4. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.
5. CMR - Code of Massachusetts Regulations; Board of Building Regulations and Standards; www.state.ma.us/bbrs.

C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Information is subject to change and is up to date as of the date of the Contract Documents.
1. COE - Army Corps of Engineers; www.usace.army.mil.
2. CPSC - Consumer Product Safety Commission; www.cpsc.gov.
3. DOC - Department of Commerce; National Institute of Standards and Technology; www.nist.gov.
4. DOD - Department of Defense; www.quicksearch.dla.mil.
5. DOE - Department of Energy; www.energy.gov.
6. EPA - Environmental Protection Agency; www.epa.gov.
7. FAA - Federal Aviation Administration; www.faa.gov.
8. FG - Federal Government Publications; www.gpo.gov/fdsys.
9. GSA - General Services Administration; www.gsa.gov.
10. HUD - Department of Housing and Urban Development; www.hud.gov.
11. LBL - Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; www.eetd.lbl.gov.
12. OSHA - Occupational Safety & Health Administration; www.osha.gov.
13. SD - Department of State; www.state.gov.

14. TRB - Transportation Research Board; National Cooperative Highway Research Program; The National Academies; www.trb.org.
15. USDA - Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.
16. USDA - Department of Agriculture; Rural Utilities Service; www.usda.gov.
17. USDOJ - Department of Justice; Office of Justice Programs; National Institute of Justice; www.ojp.usdoj.gov.
18. USP - U.S. Pharmacopeial Convention; www.usp.org.
19. USPS - United States Postal Service; www.usps.com.

D. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
1. CMR - Code of Massachusetts Regulations; Board of Building Regulations and Standards (Massachusetts); www.state.ma.us/bbrs.
    a. 521 CMR - Massachusetts Architectural Access Board; www.state.ma.us/aab.
    b. 524 CMR - Massachusetts Board of Elevator Regulations.
    c. 780 CMR - Massachusetts State Building Code; www.state.ma.us/bbrs.
    d. 780 CMR c 13 - Massachusetts Commercial Energy Code (780 CMR, Chapter 13); www.state.ma.us/bbrs.
2. M.G.L. - Massachusetts General Laws.
    a. M.G.L. Chapter 149, §§ 44A through Section 44M, (Fair Competition for Bidders on Construction, Etc., of Public Works) www.mass.gov.
3. CFR - Code of Federal Regulations; Available from Government Printing Office; www.gpo.gov/fdsys.
4. DOD - Department of Defense; Military Specifications and Standards; Available from DLA Document Services; www.quicksearch.dla.mil.
5. DSCC - Defense Supply Center Columbus; (See FS).
6. FED-STD - Federal Standard; (See FS).
7. FS - Federal Specification; Available from DLA Document Services; www.quicksearch.dla.mil.
    a. Available from Defense Standardization Program; www.dsp.dla.mil.
    b. Available from General Services Administration; www.gsa.gov.
    c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org/ccb.
8. MILSPEC - Military Specification and Standards; (See DOD).
9. USAB - United States Access Board; www.access-board.gov.
10. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (See USAB).

E. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.
1. AAB - Massachusetts Architectural Access Board (521 CMR); www.state.ma.us/aab.
2. BBRS - Board of Building Regulations and Standards (Massachusetts); www.state.ma.us/bbrs.
3. CMR - Code of Massachusetts Regulations; Board of Building Regulations and Standards; www.state.ma.us/bbrs.
4. MHD - Massachusetts Highway Department; Massachusetts Department of Transportation; www.massdot.state.ma.us.
5. CDPH; California Department of Public Health; Indoor Air Quality Program; www.cal-iaq.org.

6. SCAQMD; South Coast Air Quality Management District; www.aqmd.gov.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

Section 01 5000 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 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities, including, but not limiting to:
   1. Temporary water.
   2. Temporary power.
   3. Hoisting equipment and machinery.
   4. Staging.
   5. Maintenance of access.
   6. Dust, noise, and pollution control.
   7. Enclosures.
   8. Cleaning during construction.
   9. Collection and disposal of waste.
   10. Parking.
   11. Temporary fencing, barriers, and partitions.
   12. Protection of new and existing construction.
   13. Temporary bracing, shoring, sheeting, tie-downs.
   14. Temporary protective night lighting.
   15. Temporary job signs.
   16. Maintenance of streets, walks, and grounds.
   17. Temporary elevator use.
   18. Security and protection facilities installation.
   19. Watchmen, flagmen, police details.
   20. Municipal police and fire department services.
   21. Temporary fire protection.
   22. Temporary Offices

B. Related Requirements:
   1. “General Conditions of the Contract.”
   2. Williams-Steiger Occupational Safety and Health Act of 1970, Public Law 91-596.
   3. Part 1910 Occupational and Health Standards, Chapter 17 of Title 29, Code of Federal Regulations.
   4. Part 1418 and 1518 Safety and Health Regulations for Construction, Chapter 13 of Title 29, Code of federal Regulations.
   5. Massachusetts State Building Code 780 CMR.
   6. Section 01 1400 "Work Restrictions."

1.3 USE CHARGES

A. Contractor shall obtain all permits related to temporary work. All required permits and inspection fees will be paid for by the General Contractor performing the Work.

1.4 INFORMATIONAL SUBMITTALS

A. Make Submittals in accordance with Section 01 3300 “Submittal Procedures.”

B. Shop Drawings: Submit shop drawings for all signage.

C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
   1. Maintain sprinkler coverage or provide temporary heat detectors in areas where sprinklers are disconnected or as required by the local jurisdiction. Maintain fire alarm auto notification to Fire Department during construction.

1.5 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Comply with requirements of authorities having jurisdiction, codes, utility companies, OSHA, and industry standards including, but not limiting to:
   1. NFPA 241.
   2. NFPA 70.
   3. ANSI A10.
   4. NECA NJG-6.

C. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

D. General Contractor is solely responsible for means and methods to complete the Work including Temporary Facilities and Controls.

1.6 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

B. Other contractors employed by Owner and working concurrently within the work limits may include without limitation hazardous materials contractors, specialty system contractors and furnishing contractors. When reasonably available, General Contractor shall provide temporary facilities and controls to support the work of other contractors employed by Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Materials for temporary facilities and controls may be new or used, but must be adequate in capacity for the required usage, must not create unsafe conditions, and must not violate requirements of applicable codes and standards.

B. Metal Studs, Exterior Non-Load-Bearing Wall Framing:
   1. Steel Sheet: ASTM A 1003, Structural Grade, Type H, metallic coated.
   2. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and minimum base-metal thickness of 0.0428 inch.

C. Metal Studs, Interior: Non-load-bearing steel framing systems for interior gypsum board assemblies.
   1. Steel Sheet: ASTM C 754.
   2. Studs and Runners: ASTM C 645.

D. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

E. Interior Gypsum Board:
   1. Gypsum Wallboard: ASTM C 1396.
   2. Gypsum Board, Type X (Fire-Rated): ASTM C 1396.
   3. Joint Tape: Paper.
   4. Joint Compound: Setting-type or drying-type, all-purpose compound.

F. Exterior Wood for Ramps and Stairs: Construction or No. 2 grade, preservative-treated southern pine (SPIB).

G. Contractor shall carry 50 LF of stud wall separation – 3-5/8” MS with 1 layer Drywall taped and painted both side and sealed at all sides to prevent the passage of dust from the work areas into any occupied space.

2.2 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. General: the owner will provide a space within the facility for a field office for the General Contractor.

3.2 TEMPORARY POWER

A. Temporary Power Service: Provide temporary electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.
   1. Power: Provide power distribution as required throughout existing structure 120/208 volt, 3 phase, 60 cycle AC. Termination of power distribution shall be at one location in each major section of building, approximately at center. Termination shall be provided complete with circuit breakers, connect switches and other electrical devices as required to protect power supply system. Submit plan showing electrical distribution locations for approval. The power systems in the existing building may be inadequate – the Contractor shall assume that the use of portable generators may be required to execute the work.

B. General Contractor and all Subcontractors, individually, shall furnish all extension cords, sockets, motors, and accessories required for their work. They shall also pay for all temporary wiring of construction offices and buildings used by them. General Contractor shall pay for the offices of the General Contractor and the Owner's Clerk of the Works.

C. All temporary wiring installed by the Electrical Subcontractor shall be removed after it has served its purpose. Use copper wire only.

D. All relocations of temporary service to meet construction and/or phasing requirements shall be performed at no additional cost to Owner.

E. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

F.

3.3 HOISTING EQUIPMENT AND MACHINERY

A. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities. Truck cranes and similar devices include but are not limited to aerial work platforms (boom lifts, scissor lifts, vertical mast lifts) and telehandlers.

B. General Contractor shall provide (furnish, install, operate and maintain) in safe condition all hoisting equipment and machinery required for the proper and expeditious prosecution and progress of the Work.

3.4 STAGING

A. General Contractor shall provide all staging and scaffolding required for the work in complete compliance with OSHA regulations. Subcontractors shall comply with all OSHA regulations, state and local regulations and requirements. Aluminum and metal ladders are not permitted. The OSHA six foot fall rule in its entirety will be enforced on this project for ALL trades.

B. Staging shall comply with governing laws and codes.

3.5 MAINTENANCE OF ACCESS

A. General Contractor shall provide and maintain for the duration of his contract, a means of access to, around and within the site for vehicular traffic and authorized personnel. This means of access shall be construed to sustain the weight of equipment customarily engaged for use in construction projects of this type and magnitude. General Contractor shall, without additional compensation from Owner, furnish labor and materials as may be required from time to time to maintain this means of access in an acceptable condition as determined by Architect. Pedestrian access shall provide adequate protection against falling debris, slippage, adequate lighting, warning and directional signs, and protection against construction activities.

B. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

3.6 DUST, NOISE, AND POLLUTION CONTROL

A. Work performed under this 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, and to more stringent requirements of the Contract Documents, governing limitation of noise and environmental pollution.

B. Dust: General Contractor shall provide adequate means for the purpose of preventing dust caused by construction operations from creating a hazard, nuisance, and from entering adjacent occupied areas throughout the period of the construction contract.
   1. This provision does not supersede any specific requirements for methods of construction or applicable general conditions set forth in the Contract Articles with added regard to performance obligations of General Contractor.

C. Noise: Comply with requirements of authorities having jurisdiction. Develop and maintain a noise-abatement program and enforce strict discipline over all personnel to keep noise to a minimum.
   1. Endeavor at all times to maintain as low a level of construction noise as practicable in order not to create a disturbance in the neighborhood.
   2. Execute construction work by methods and by use of equipment which will reduce excess noise.
      a. Equip air compressors with silencers, and power equipment with mufflers.
      b. Manage vehicular traffic and scheduling to reduce noise.
   3. Any high noise level operations intended to occur during early morning and evening hours or weekends shall be subject to review and approval by Owner prior to proceeding.
   4. Any complaints duly registered by Owner of unacceptable noise levels shall be cause for the use of special precautions and methods of operation by Contractor to reduce noise to acceptable levels, at no additional cost to Owner.
      a. Owner will be the sole judge of the tolerability of noise levels.

D. General Contractor shall institute all measures required to control the generation of dust and to contain contractor-generated dust, inside and outside the building and to the work areas. Provide substantial dust barriers to conduct dust-laden exhaust air away from occupied spaces so as to cause no nuisance. If necessary to limit objectionable levels of dust, provide dust trapping systems or filters. Provide equipment and air filtration systems to maintain work areas in building at negative pressure with respect to adjacent building areas. Use water fog and mist (riot spray or stream) to dampen dusty areas. Contain waste debris disposal operations in enclosures, chutes and covered containers.
   1. If the spread of construction generated dust to neighboring property is found to be objectionable, Contractor shall increase efforts to contain construction dust until acceptable conditions are obtained, at no additional cost to Owner.
   2. Provide workers in dusty areas with protection and safety facilities in accordance with requirements of authorities having jurisdiction.
   3. Dust and other debris resulting from work with painted materials or hazardous material shall be lawfully disposed of, and treatment of hazardous material shall conform to requirements of authorities having jurisdiction.
   4. Prevent dust from entering the ventilation systems by covering, sealing and protecting ductwork, diffusers, grilles, louvers and vents.

5. Protect, cover and seal fire detection and alarm components.
6. Protect, cover and seal light fixtures and lamps.
7. Use tools with directly attached vacuum hoses when engaging in activities that produce dust. Do not sweep using dust control products that contaminate floors with oil or other contamination detrimental to finish floor installation. Do not use compressed air to clean unless vacuums are being used simultaneously.
8. Limit dust to 150 micrograms of airborne, breathable particles per cubic meter of air.

3.7 ENCLOSURES

A. Provide temporary, insulated, weather tight closures of openings in exterior surfaces for providing acceptable working conditions and protection for materials, allowing for heating during construction, and preventing entry of unauthorized persons. Provide doors with self-closing hardware and locks.

B. All utilities including electric ducts, conduits, telephone lines, sprinklers, and other utilities shall be protected against damage from construction activity. General Contractor shall be responsible for all damage to the utilities from construction and shall repair all such damage at no additional cost to Owner.

3.8 CLEANING DURING CONSTRUCTION

A. Unless otherwise specified under the various trade Sections of the Specifications, General Contractor shall perform cleanup operations during construction as herein specified.
   1. General Contractor shall provide temporary dumpster type trash containers outside the building for use by all trades, 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 continuously ready to receive trash and debris.
   2. 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 be permitted to drop freely there from.

B. Control accumulation of waste materials and rubbish; periodically dispose of off-site in a legal manner. General Contractor shall bear all costs, including fees resulting from such disposal.

C. Clean interior areas prior to start of finish work and maintain areas free of dust and other contaminants during finish operations.

D. Maintain project in accordance with all local, Commonwealth of Massachusetts, and Federal Regulatory Requirements.
   1. Store volatile wastes in covered metal containers, and remove from premises.
   2. Prevent accumulation of wastes which create hazardous conditions.
   3. Provide adequate ventilation during use of volatile or noxious substances.

E. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
   1. Do not burn or bury rubbish and waste materials on site.
   2. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
   3. Do not dispose of wastes into streams or waterways.

4. Identify potential sources of cleaning water runoff and propose abatement procedures.

F. Use only those materials which will not create hazards to health or property and which will not damage surfaces.

G. Use only those cleaning materials and methods recommended by manufacturer of surface materials to be cleaned.

H. Execute cleaning to ensure that the buildings, the sites, and adjacent properties are maintained free from accumulations of waste materials and rubbish and windblown debris, resulting from construction operations.

I. Provide on-site containers for collection of waste materials, debris and rubbish.

J. Remove waste materials, debris and rubbish form the site periodically and dispose of at legal disposal dump site (DEP approved).

K. Handle material in a controlled manner with as few handlings as possible. Do not drop or throw materials from heights.

L. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not damage surrounding surfaces.

3.9 COLLECTION AND DISPOSAL OF WASTE

A. Provide identifiable waste receptacles distributed conveniently around the site and throughout the buildings. Provide separate containers for combustible and non-combustible waste. Collect waste from construction areas and elsewhere daily: waste shall not be left in the buildings overnight, or in open containers on the site. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F. Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material lawfully. Refer to Safety Requirements and Hazardous Materials Sections for additional requirements.

B. Packaging materials for all products, materials and equipment shall be promptly removed from the building on unpacking each item.

C. Provide proper and lawful means of disposal of all wastes generated in the work. Waste water from cleaning operations, including cleaning of masonry, may contain material that may not be discharged into public sewers, and Contractor shall provide suitable means for holding, filtering and legally disposing of such waste water.

D. Disposal of waste in Owner provided receptacles is prohibited.

3.10 SANITARY FACILITIES

A. The owner will allow the contractor to utilize the single user restroom within the work area for contractor use provided that the bathroom is fully cleaned and stocked at the completion of the project.

3.11 PARKING

A. General Contractor shall limit the use of the Site to construction vehicles and equipment. Worker's vehicle parking will be within the areas designated by Owner.

B. The General Contractor is responsible to repair all disturbed site areas to original condition at the Project Completion.

3.12 TEMPORARY FENCING, BARRIERS, AND PARTITIONS

A. 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 Owner's materials stored or otherwise located on the site.

B. Temporary Barricading: 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. Comply fully with recommendations of the Association of General Contractors and provisions of the governing laws and codes.
   1. As part of requirement for overhead protection, include substantial, well constructed, walkway 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. 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 phase work-limit-lines separating Contract work areas from areas occupied by 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 and curtaining shall be self-supporting, and shall 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 Owner or Architect, shall not be construed as relieving Contractor of any of his responsibilities under the Contract.

3.13 PROTECTION OF NEW AND EXISTING CONSTRUCTION

A. Contractor shall protect all new and existing finished surfaces against possible damage from operations under this Contract and shall restore or replace all surfaces that are damaged by operations under this Contract to the original condition at no additional expense to Owner.

B. When new finished flooring is completed in an area, it shall be protected by Contractor from dirt and damage by covering with heavy paper or other approved covering. Protective covering shall be replaced if it becomes torn or otherwise damaged.

C. Contractor shall keep traffic on roofs to an absolute minimum and shall permit traffic only as required to complete the work under the Contract. Protect roof surfaces to prevent damage, and repair or replace damaged roofing and substrates by any necessary means, in accordance

with specifications and the requirements and recommendations of the manufacturer of the affected roofing system at no additional cost to Owner.

D. Contractor shall not load, or allow any part of the structure to be loaded, with a weight that will endanger its safety or the safety of personnel operating in or around the premises.

3.14 TEMPORARY JOB SIGNS

A. Project Signs, General: Provide Project signs as required. Unauthorized signs are not permitted.

B. General Contractor shall erect, paint, and maintain signs for with supports, professionally lettered of a design subsequently to be submitted by Architect. No other signs or advertising matter of any kind shall be allowed except with further approval of Architect.
   1. Provide construction delivery control, traffic, and site exit and entrance signs. Provide vehicular traffic, parking, and pedestrian traffic control signs. Provide safety, warning, and life safety egress signs.
   2. Advertising, election, and other non-required temporary signs are prohibited.
   3. Comply with local sign ordinances and requirements of authorities having jurisdiction prior to sign erection.
   4. Obtain and pay for all sign permits required by authorities having jurisdiction.
   5. Maintain and touchup signs so they are legible at all times.
   6. Remove and dispose of temporary signs when directed by Owner. Deliver to Owner any temporary sign identified.

C. Construction Delivery, Traffic Control, and Site Entrance / Exit Signs:
   1. Provide at site entrances and exits. Direct deliveries and construction traffic to construction entrances. Prohibit deliveries and construction traffic from Owner's entrances, drives and parking areas.
   2. Use standard highway sign colors and sizes for traffic control.
   3. Provide 30 by 30 inch aluminum sign panels with vinyl computer cut wording or silkscreen painted. Sign panels to have black text on yellow or orange back ground. Sign supports to be similar to "37024" Seton Identification Products, www.seton.com.

3.15 MAINTENANCE OF STREETS, WALKS, AND GROUNDS

A. Contractor shall maintain all access roads and walks in areas under his control clear of debris and obstructions during entire time of the Contract. Contractor shall also be responsible for the repair of off-site streets, curbs, sidewalks, and poles where disturbed or damaged by operations under this Contract, and leave them in as good condition after completion of the work as before operations started. Contractor shall immediately notify the proper authorities in case of damage to utilities, municipal property, or Owner's property. Work in public ways shall conform to applicable provisions of the Contract Documents, or to higher requirements of local authorities having jurisdiction.

B. No unauthorized entry, passage through, or storage or disposal of materials shall be made upon any part of the Site or adjoining property, outside the Contract-limit-lines.

C. Trucking: Comply with authorities having jurisdiction. Restrict truck traffic to approved truck routes and schedule truck traffic outside of normal commuter rush hours. Comply with truck engine idling laws and ordinances. Do not overload trucks. Cover all open trucks entering and

leaving the site and do not spill load on public ways. Wash truck tires and wheels prior to leaving the site and do not soil public ways.

3.16 TEMPORARY ELEVATOR USE

A. Temporary Use of Elevator: For temporary use of elevator equipment prior to final completion and final acceptance, make necessary arrangements with Owner, subject to approval of Owner and Architect and governing code compliance.

3.17 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
   1. Comply with work restrictions specified in Section 01 1400 “Work Restrictions."

C. Temporary Erosion and Sedimentation Control: Comply with requirements of 2003 EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent and requirements specified in Section 31 2500 “Erosion And Sediment Control."

D. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.

3.18 FIRE WATCH SERVICES

A. Fire Watch: Provide a fire watch detail whenever on-site welding, torching, and “hot-work” is being performed.

3.19 TEMPORARY FIRE PROTECTION

A. General Contractor shall provide and maintain in good working order, readily available to all portions of the Site and Work, suitable and adequate fire protection equipment and services. Such equipment and facilities shall include, but not be limited to, the furnishing and maintaining in good working order a minimum of two standard, Underwriter’s Laboratories labeled, 2-1/2 gal. capacity fire extinguishers per floor.
   1. Provide one Type A-B-C fire extinguisher on each floor near each stairway, in clear view, mounted on a 2 by 4 foot plywood panel painted red and clearly labeled in white letters “Fire Extinguisher."

B. General Contractor shall take necessary precautions for the prevention of fire during construction. Contractor 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 the site in a manner and at locations approved by Architect.

General Contractor shall comply with all suggestions regarding fire protection made by the insurance company with which Owner maintains his fire insurance.

C. Strict safety precautions shall be observed when burning with a torch or using other open flames. Contractor shall provide adequate type and number of portable fire extinguishers so that wherever and whenever a torch or open flame is used, a fire watch armed with an appropriate fire extinguisher shall be used. Comply with requirements of the Fire Department, obtain Hot-Work Permits for each day as required, and pay all fees and charges.
   1. Fires shall not be built on the Site.
   2. Protect combustible materials from ignition. Securely restrain compressed gas tanks. Protect from high temperatures, direct sunlight and combustion.

3.20 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.
   1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
   1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
   2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
   3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 01 7700 "Closeout Procedures."

3.21 TEMPORARY OFFICES

A. The owner will allow the contractor use of (1) room within the building – the contractor shall keep the room clean and orderly and upon completion of the project the room shall be in the same condition as at the start of the project.

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 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

B. Related Requirements:
1. Section 006325 "Substitution Procedures" for requests for substitutions.
2. Section 014200 "References" for applicable industry standards for products specified.

1.3 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
3. Comparable Product: Product that is demonstrated and approved by Architect through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design, BOD, Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification. Designer(s) do not guarantee that the BOD product will fully comply with specification and contract requirements at the time of bid, it is the sole responsibility of the submitting contractors to confirm that the BOD product meets the requirements of the contract prior to submission of bids.

C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications. Submit a comparable product request, if applicable.

1.4 ACTION SUBMITTALS

A. Make Submittals in accordance with Section 013300 “Submittal Procedures.”

B. Comparable Product Request Submittal: Submit request for consideration of each comparable product. Identify basis-of-design product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
   1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.
   2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
      a. Form of Architect's Approval of Submittal: As specified in Section 01 3300 "Submittal Procedures."
      b. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

C. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 01 3300 "Submittal Procedures." Show compliance with requirements.

1.5 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
   1. Contractor, each Trade Contractor, and each subcontractor is responsible for providing products and construction methods compatible with products and construction methods of other subcontractors.
   2. If a dispute arises between Contractor and a Trade Contractor, or a subcontractor over concurrently selectable but incompatible products, Architect will determine which products shall be used.

B. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.
   1. Labels: Locate required product labels and stamps on a concealed surface, or, where required for observation following installation, on a visually accessible surface that is not conspicuous.
   2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on a visually accessible but inconspicuous surface. Include information essential for operation, including the following:

a. Name of product and manufacturer.
b. Model and serial number.
c. Capacity.
d. Speed.
e. Ratings.

3. See individual identification sections in Divisions 21, 22, 23, and 26 for additional identification requirements.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling:
1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

C. Storage:
1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
1. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.

2. Specified Form: When specified forms are included with the Specifications, prepare a written document using indicated form properly executed.
3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
6. Or Equal: For products specified by name and accompanied by the term "or equal," or "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.
    a. Submit additional documentation required by Architect in order to establish equivalency of proposed products. Evaluation of "or equal" product status is by the Architect, whose determination is final.

B. Product Selection Procedures:
1. Preference: When selecting products and materials, first priority should be given to products and materials manufactured, harvested, mined or quarried in Massachusetts; second priority should be given to products and materials manufactured, harvested, mined or quarried in the United States of America; last priority should be given to products and materials manufactured, harvested, mined or quarried outside the United States of America.
2. Sole Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered.
    a. Sole product may be indicated by the phrase: "Subject to compliance with requirements, provide the following: …"
3. Sole Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered.
    a. Sole manufacturer/source may be indicated by the phrase: "Subject to compliance with requirements, provide products by the following: …"
4. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered.
    a. Limited list of products may be indicated by the phrase: "Subject to compliance with requirements, provide one of the following: …"

5. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, which complies with requirements.
   a. Non-limited list of products is indicated by the phrase: "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following: …"
6. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered.
   a. Limited list of manufacturers is indicated by the phrase: "Subject to compliance with requirements, provide products by one of the following: …"
7. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, which complies with requirements.
   a. Non-limited list of manufacturers is indicated by the phrase: "Subject to compliance with requirements, available manufacturers whose products may be incorporated in the Work include, but are not limited to, the following: …"
8. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.
   a. For approval of products by unnamed manufacturers, comply with requirements in Section 01 2500 "Substitution Procedures" for substitutions for convenience.
9. Proprietary Products: M.G.L. Chapter 30, § 39M (b) allows for requesting proprietary products for sound reasons in the public interest stated in writing in the public records of the awarding authority or promptly given in writing by the awarding authority to anyone making a written request therefor.
   a. Where Specifications name a single manufacturer and product followed by the words “Proprietary Product” or “No Substitutions,” provide the named product. Comparable products or substitutions will not be considered.

C. Visual Matching Specification: Where Specifications require "match Architect's sample," provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
   1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 01 2500 "Substitution Procedures" for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

A. Conditions for Consideration of Comparable Products: Architect will consider Contractor's request for a comparable product in accordance with M.G.L. Chapter 30, § 39M (b), when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements.

1. It is at least equal in quality, durability, appearance, strength and design.
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.
3. It conforms substantially, even with deviations, to the detailed requirements for the item in the said specifications.
4. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
5. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
6. Evidence that proposed product provides specified warranty.
7. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
8. Samples, if requested.

B. Submittal Requirements: Approval by Architect of Contractor's request for use of comparable product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.

PART 3 - EXECUTION (Not Used)

END OF SECTION

Section 01 6115 Fastener Requirements

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes general requirements for fasteners.

B. Related Requirements:
   1. Divisions 02 thru 33 Sections for specific product requirements.

1.3 ACTION SUBMITTALS

A. Make Submittals in accordance with Section 01 3300 “Submittal Procedures.”

B. Product Data: For the following:
   1. For each fastener, submit manufacturer's data including load capacity, factor of safety, instructions, recommendations, and restrictions.

1.4 FASTENER REQUIREMENTS, GENERAL

A. Completely Specified Fasteners: Where fasteners are completely specified in the Contract Documents, provide the specified fasteners.
   1. Completely Specified means the fastener type, material, finish, size, diameter, length, and spacing are specified.

B. Fasteners Not Completely Specified: Fasteners may not be completely specified in the Contract Documents:
   1. To allow the Contractor to control means, methods, and techniques of construction.
   2. When "Engineering By Contractor" is required.

C. Fasteners Selected By Contractor: For fasteners not completely specified in the Contract Documents, the Contractor shall:
   1. Select fasteners appropriate for each condition, substrate, load, and exposure.
   2. Use fastener manufacturer's published load tables to determine fastener size and spacing.
   3. Provide a safety factor of five or higher.
      a. Working load shall be 20.
   4. Provide corrosion resistance at least equivalent to items being fastened.
   5. Obtain Architect's approval of each fastener prior to use.
   6. Install fasteners in compliance with the fastener manufacturer's recommendations.

D. Fasteners for "Engineering By Contractor": Provide fasteners indicated on the approved, engineered shop drawings.

E. Country of Manufacture: USA, except where specified as "Basis of Design" products.

F. Matched Bolts, Washers. Nuts: Required, from same manufacturer.

G. Galvanic Isolation: Comply with Section 01 7300 “Execution.”

H. Visible Fasteners: Permitted only where indicated or preapproved by Architect.

1.5 REQUIREMENTS FOR STRUCTURAL FASTENERS

A. Comply with fastener manufacturer’s instructions, recommendations and limitations.

B. Working Load Capacity: Install each fastener to achieve the fastener manufacturer's published working load capacity.
1. Working load capacity is not ultimate load capacity.

C. Torque: Torque each fastener within the min/max range recommended by fastener manufacturer.

D. Fasteners Requiring Predrilling or "Pilot" Holes:
1. Use only the fastener manufacturer's recommended coordinated drill bit diameter.
2. Drill hole to depth recommended by fastener manufacturer.
3. Clean holes prior to installation of fasteners.
4. These are important requirements that significantly impact structural capacity.

E. Quantity: Provide quantity indicated, or if not indicated:
1. Provide one fastener for each factory provided fastener hole in item being fastened.
2. Provide at least two fasteners for each individual item being fastened.

PART 2 - PRODUCTS (not applicable)

PART 3 - EXECUTION (not applicable)

END OF SECTION

Section 01 7300 Execution

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:
   1. Construction layout.
   2. Field engineering and surveying.
   3. Installation of the Work.
   4. Coordination of Owner-installed products.
   5. Progress cleaning.
   6. Starting and adjusting.
   7. Protection and repair of installed construction.

B. Related Requirements:
   1. Section 01 1000 "Summary" for coordination of Owner-furnished products, and limits on use of Project site.
   2. Section 01 3300 "Submittal Procedures" for submitting surveys.
   3. Section 01 7329 “Cutting and Patching” for general administrative and procedural requirements governing cutting and patching.
   4. Section 01 7333 “Remedial Work to Correct Errors” for remedial work to correct errors includes cutting and patching associated with construction errors including defective, non-conforming, ill-timed, and improperly fitting work.
   5. Section 01 7700 "Closeout Procedures" for Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, replacing defective work, and final cleaning.

1.3 QUALITY ASSURANCE

A. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of specified products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Comply with requirements specified in other Sections.
   1. For projects requiring compliance with sustainable design and construction practices and procedures, use products for patching that comply with sustainable design requirements.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
   1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials. Use materials that are not considered hazardous.

C. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
   1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
   1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
   2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
   3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

B. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
   1. Description of the Work, including Specification Section number and paragraph, and Drawing sheet number and detail, where applicable.
   2. List of detrimental conditions, including substrates.
   3. List of unacceptable installation tolerances.
   4. Recommended corrections.

C. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

C. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect in accordance with requirements in Section 01 3100 "Project Management and Coordination."

3.3 INSTALLATION

A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
   1. Make vertical work plumb, and make horizontal work level.
   2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
   3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
   4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces, unless otherwise indicated on Drawings.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure satisfactory results as judged by Architect. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations, so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy of type expected for Project.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on-site and placement in permanent locations.

F. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.

G. Templates: Obtain and distribute to the parties involved templates for Work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions with manufacturer.
   1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
   2. Allow for building movement, including thermal expansion and contraction.
   3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

I. Joints: Make joints of uniform width. Where joint locations in exposed Work are not indicated, arrange joints for the best visual effect, as judged by Architect. Fit exposed connections together to form hairline joints.

J. Repair or remove and replace damaged, defective, or nonconforming Work.
   1. Comply with Section 01 7700 "Closeout Procedures" for repairing or removing and replacing defective Work.

3.4 PROGRESS CLEANING

A. Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
   1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
   2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
   3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
      a. Use containers intended for holding waste materials of type to be stored.
   4. Coordinate progress cleaning for joint-use areas where Contractor, Filed Sub-Bidders, and other subcontractors are working concurrently.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where Work is in progress to the level of cleanliness necessary for proper execution of the Work.
   1. Remove liquid spills promptly.
   2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 01 7419 "Construction Waste Management and Disposal."

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.5 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Manufacturer's Field Service: Comply with qualification requirements in Section 01 4000 "Quality Requirements."

3.6 PROTECTION AND REPAIR OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Repair Work previously completed and subsequently damaged during construction period. Repair to like-new condition.

C. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION

Section 01 7329 Cutting and Patching

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes general administrative and procedural requirements governing cutting and patching.

B. Related Requirements:
1. Section 01 7333 "Remedial Work to Correct Errors."
2. Division 02 thru 33 Sections for materials and installation requirements for patching.

1.3 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other work. Cutting includes undercutting.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

C. Coring: A new penetration cut through existing or new construction using a coring drill, and measuring not more than 6 inches in diameter, or measuring not more than 6 by 6 inches square. Larger openings will be considered under-cutting.

D. Undercutting: Cutting away material from existing or new construction so as to leave a portion overhanging.

1.4 INFORMATIONAL SUBMITTALS

A. Make Submittals in accordance with Section 01 3300 “Submittal Procedures.”

B. Cutting and Patching Plan: Submit plan describing procedures at least 10 days prior to the time cutting and patching will be performed. Include the following information:
1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
3. Products: List products to be used for patching and firms or entities that will perform patching work.
4. Dates: Indicate when cutting and patching will be performed.

5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.
    a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.

1.5 INVESTIGATIVE SURVEYS

A. Subsurface Utilities: General Contractor shall perform investigative surveys to determine the exact location of underground utilities, including utilities below slabs-on-grade, by use of ground penetrating radar (GPR), or other methods approved by Architect.

B. Re-Bars and Coring: Before coring, General Contractor shall perform investigative surveys to determine exact locations of reinforcing bars in concrete. Do not cut reinforcing bars in concrete without prior written approval of Architect's structural engineer.

1.6 QUALITY ASSURANCE

A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
    1. Structural Elements: When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection
        a. Restrictions for Cutting Structural Members: Do not cut structural members including steel reinforcing, unless the cutting is clearly shown and detailed on the Structural Contract Drawings.
        b. Proposed Structural Cutting Not Shown On Structural Contract Drawings: Prior to cutting structural members not shown on Structural Contract Drawings, obtain Owner's and Project Structural Engineer of Record's approval of proposed cutting of structural members.
            1) Provide specially prepared drawings for each specific structural cutting operation proposed.
            2) Show all structural members proposed to be cut including, without limitation, load bearing walls, structural framing of all types, structural slabs and decks, concrete, structural masonry, and rebar.
            3) Provide temporary shoring and bracing as specified below.
    2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include but are not limited to the following:
        a. Primary operational systems and equipment.
        b. Fire separation assemblies.
        c. Air or smoke barriers.
        d. Fire-suppression systems.
        e. Mechanical systems piping and ducts.
        f. Control systems.
        g. Communication systems.
        h. Fire-detection and -alarm systems.

i. Conveying systems.
j. Electrical wiring systems.
k. Operating systems of special construction.

3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:
   a. Water, moisture, or vapor barriers.
   b. Membranes and flashings.
   c. Exterior curtain-wall construction.
   d. Sprayed fire-resistive material.
   e. Equipment supports.
   f. Piping, ductwork, vessels, and equipment.
   g. Noise- and vibration-control elements and systems.
4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

B. Cutting Techniques:
   1. Preform cutting by sawing, drilling or coring.
   2. Cutting by chipping, hammering or breaking is prohibited and will not be allowed.

C. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.7 COORDINATION

A. General Contractor shall be responsible for the following:
   1. Obtain locations and dimensions of required penetrations through walls and floors from trades requiring penetrations.
   2. Coordinate those penetrations with the requirements of other trades.
   3. Forward locations and dimensions of requested penetrations to the trades responsible for performing the cutting and patching work.

B. General Contractor shall perform cutting and patching work except where cutting and patching work is indicated to be performed by a Trade Sub-Bid subcontractor.

C. Coring of openings up to and including 6 inches shall be performed by the trade requiring the new penetration. Coring of openings larger than 6 inches shall be performed by General Contractor.
   1. Investigative survey for re-bar locations shall be performed by General Contractor.

1.8 WARRANTY

A. Warranties: Cut and patch systems, materials, and surfaces with materials and methods so as not to void existing or new warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

A. For patching materials and installation procedures, comply with requirements specified in other Sections.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
   1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine materials and surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
   1. Before cutting and patching, verify compatibility and suitability of substrates, including compatibility with in-place finishes and primers.

3.2 PREPARATION

A. Provide temporary support of Work to be cut and patched.

B. Protect in-place construction during cutting and patching to prevent damage. Provide protection from weather for portions of Project that might be exposed during cutting and patching operations. Refer to Section 015000 “Temporary Facilities and Controls” for additional protection requirements.

C. Avoid interference with the use of adjacent areas or interruption of passage to adjacent areas.

3.3 CUTTING AND PATCHING, GENERAL

A. Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
   1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.

C. Temporary Support: Provide temporary support of work to be cut, including undercutting.
   1. Temporary Shoring and Bracing: Design, engineer, and provide all temporary shoring and bracing needed to ensure safety of people and property.

a. Provide specially prepared shop drawings for each specific shoring and bracing scheme proposed.
b. Show loads, reactions, anchorage, and connections.
c. Provide "Engineering By Contractor" for proposed shoring and bracing.

D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching according to requirements in Section 01 1000 "Summary" and Section 01 1417 "Owner Occupancy Requirements."

F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.

G. General Requirements for Concealed Elements:
1. Thoroughly investigate and understand visually concealed conditions prior to cutting.
2. Use electronic metal sensors and density change sensors to locate concealed items.
3. Do not unintentionally cut concealed structural members including steel reinforcing.
4. Do not unintentionally cut utilities.

H. General Requirements for Cutting:
1. Make submittal and obtain written approval prior to all cutting.
2. Accurately layout and mark openings in plan and elevation prior to cutting.
3. Investigate and confirm concealed conditions and concealed elements.
4. Provide uniform, precise, circular, rectangular, or square openings.
5. Make openings the minimum size necessary to accommodate the work.
6. Size openings to accommodate fire stopping, sealants, and similar related work.
7. At locations visible in the completed work, ensure cut edges will be covered by trim rings.
8. Protect adjacent surfaces from cutting related damage including dust, water, and vibration.

I. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.

J. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
   1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
   2. Perform patching so as to maintain the fire rating and acoustical rating, if any, of the construction being patched.
   3. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
      a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
      b. Restore damaged pipe covering to its original condition.
   4. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
      a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
   5. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
   6. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.

3.4 CUTTING AND PATCHING BY TRADE-BID SUBCONTRACTORS

A. Masonry: Cutting and patching of masonry shall be performed by the Masonry Trade Sub-Bid subcontractor.

B. Waterproofing, Dampproofing and Caulking: Cutting and patching of waterproofing, dampproofing, and caulking shall be performed by the Waterproofing, Dampproofing, and Caulking Trade Sub-Bid subcontractor.

C. Roofing And Flashing: Cutting and patching of roofing and flashing shall be performed by the Roofing And Flashing Trade Sub-Bid subcontractor.

D. Metal Fabrications: Cutting and patching of metal fabrications, including metal stair, pipe and tube railings, metal gratings, and decorative metal railings, shall be performed by the Miscellaneous And Ornamental Iron Trade Sub-Bid subcontractor.

E. Tile: Cutting and patching of tile shall be performed by the Tile Trade Sub-Bid subcontractor.

F. Painting: Painting of patched surfaces shall be performed by the Painting Trade Sub-Bid subcontractor.

G. Plumbing: Cutting and patching of Plumbing work shall be performed by the Plumbing Trade Sub-Bid subcontractor.

H. HVAC: Cutting and patching of HVAC work shall be performed by the Heating, Ventilating, and Air-Conditioning Trade Sub-Bid subcontractor.

I. Electrical: Cutting and patching of electrical work shall be performed by the Electrical Trade Sub-Bid subcontractor.

3.5 CLEANING

A. Dispose of waste materials in accordance with Section 01 7419 “Construction Waste Management And Disposal.”

B. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

END OF SECTION

Section 01 7333 Remedial Work to Correct Errors

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes general requirements and procedures for remedial work to correct errors.

B. Related Requirements:
   1. Section 01 4000 “Quality Requirements” for administrative and procedural requirements for quality assurance and quality control.
   2. Section 01 7300 "Execution" for general cutting and patching requirements.

1.3 INFORMATIONAL SUBMITTALS

A. Make Submittals in accordance with Section 01 3300 “Submittal Procedures.”

B. Make a unique submittal for each instance of remedial work to correct errors. Each submittal shall include:
   1. Identification, description, and location of work requiring remedial work to correct errors.
   2. Date work requiring remedial work to correct errors was originally completed.
   3. Date work requiring remedial work to correct errors was discovered to require remediation.
   4. Explanation of why remedial work to correct errors is necessary.
   5. Description of proposed remedial work to correct errors.
   6. Submittals for all proposed patching materials and products including, without limitation, manufacturer's product data, instructions, recommendations, and restrictions.
   7. Submittals of scaled drawings showing proposed remedial work to correct errors.

1.4 REQUIREMENTS

A. Applicability: Remedial work to correct errors includes cutting and patching associated with:
   1. Construction errors including, without limitation, defective, non-conforming, ill-timed, and improperly fitting work.
   2. Removing samples of installed work and related patching for testing, inspection, and verification.
   3. Removing installed work and related patching to expose concealed work for testing, inspection, and verification, if the work was concealed prematurely before testing, inspection, and verification.

B. Filed Sub-Bidders and subcontractors shall coordinate their work with General Contractor to avoid the necessity of remedial work to correct errors.

1. Each Filed Sub-Bidder and subcontractor shall pay for remedial work to correct errors due to their error and their failure to coordinate their work with General Contractor.

C. Employ skilled trade workers to perform remedial work to correct errors.

D. Cutting and Patching: Comply with Section 01 7300 “Execution” for cutting and patching requirements.

1.5 REMEDIAL WORK TO CORRECT ERRORS RELATING TO STRUCTURAL ASSEMBLIES

A. For all remedial work to correct errors related to the building’s structural assemblies, including but not limited to structural concrete, structural steel, structural decking, structural light gage steel framing, structural wood, structural connections, and other structural assemblies, comply with Section 01 4000 “Quality Requirements” for engineering to be performed by Contractor, including but not limited to:
   1. Engineer's qualifications.
   2. Professional liability, errors and omissions insurance for design professionals employed by Contractor.
   3. Indemnification of Owner.
   4. Engineering requirements including "minimum requirements" for the work.
   5. Engineer's responsibilities.
   6. Substitutions.
   7. Limitations of Architect's review.

B. Engineer, calculate, design, document, prepare, professionally seal, sign, and submit structural calculations, shop fabrication drawings, erection and installation drawings, and all other documents needed.

C. Certify that remedial work to correct errors is equivalent to or stronger than the original work.

PART 2 - PRODUCTS (not applicable)

PART 3 - EXECUTION (not applicable)

END OF SECTION

Section 01 7419 Construction Waste Management and Disposal

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for the following:
   1. Salvaging nonhazardous demolition waste.
   2. Recycling nonhazardous demolition waste.
   3. Disposing of nonhazardous demolition waste.

B. Related Sections:
   1. Division 02 Section "Selective Demolition" for disposition of waste resulting from partial demolition of buildings, structures, and site improvements, and for disposition of hazardous waste.

1.2 DEFINITIONS

A. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

B. Disposal: Removal off-site of demolition waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

C. Recycle: Recovery of demolition waste for subsequent processing in preparation for reuse.

D. Salvage: Recovery of demolition waste and subsequent sale or reuse in another facility.

E. Salvage and Reuse: Recovery of demolition waste and subsequent incorporation into the Work.

1.3 ACTION SUBMITTALS

A. Waste Management Plan: Submit plan within 7 days of date established for commencement of the Work.

1.4 INFORMATIONAL SUBMITTALS

A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report for demolition waste. Include the following information:
   1. Material category.
   2. Generation point of waste.
   3. Total quantity of waste in tons (tonnes).
   4. Quantity of waste salvaged, both estimated and actual in tons (tonnes).
   5. Quantity of waste recycled, both estimated and actual in tons (tonnes).
   6. Total quantity of waste recovered (salvaged plus recycled) in tons (tonnes).
   7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

C. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

D. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

E. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

F. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

G. Qualification Data: For waste management coordinator and refrigerant recovery technician.

H. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.5 QUALITY ASSURANCE

A. Waste Management Coordinator Qualifications: Experienced firm, with a record of successful waste management coordination of Projects with similar requirements.

B. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

C. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

D. Waste Management Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:
   1. Review and discuss waste management plan including responsibilities of waste management coordinator.
   2. Review requirements for documenting quantities of each type of waste and its disposition.
   3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
   4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
   5. Review waste management requirements for each trade.

1.6 WASTE MANAGEMENT PLAN

A. Develop a waste management plan according to ASTM E 1609 and requirements of this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.

B. Waste Identification: Indicate anticipated types and quantities of demolition waste generated by the Work. Include estimated quantities and assumptions for estimates.

C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
   1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
   2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
   3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
   4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
   5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
   6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be located.

D. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there was no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Include the following:
   1. Total quantity of waste.
   2. Estimated cost of disposal (cost per unit). Include hauling and tipping fees and cost of collection containers for each type of waste.
   3. Total cost of disposal (with no waste management).
   4. Revenue from salvaged materials.
   5. Revenue from recycled materials.
   6. Savings in hauling and tipping fees by donating materials.
   7. Savings in hauling and tipping fees that are avoided.
   8. Handling and transportation costs. Include cost of collection containers for each type of waste.
   9. Net additional cost or net savings from waste management plan.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
   1. Comply with Division 01 Section "Temporary Facilities and Controls" for operation, termination, and removal requirements.

B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan.

C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.
   1. Distribute waste management plan to everyone concerned within three days of submittal return.
   2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
   1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
   2. Comply with Division 01 Section "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until installation.
   4. Protect items from damage during transport and storage.
   5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

B. Salvaged Items for Sale and Donation: Not permitted on Project site.

C. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until delivery to Owner.
   4. Transport items to Owner's storage area designated by Owner.
   5. Protect items from damage during transport and storage.

D. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.

E. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.

F. Plumbing Fixtures: Separate by type and size.

G. Lighting Fixtures: Separate lamps by type and protect from breakage.

H. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

3.3 RECYCLING DEMOLITION WASTE, GENERAL

A. Recycle paper and beverage containers used by on-site workers.

B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall be shared equally by Owner and Contractor.

C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.

D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved waste management plan.
   1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
      a. Inspect containers and bins for contamination and remove contaminated materials if found.
   2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
   3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
   4. Store components off the ground and protect from the weather.
   5. Remove recyclable waste off Owner's property and transport to recycling receiver or processor.

3.4 RECYCLING DEMOLITION WASTE

A. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.
   1. Pulverize concrete to maximum 4-inch (100-mm) size.

B. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.
   1. Pulverize masonry to maximum 4-inch (100-mm) size.
   2. Clean and stack undamaged, whole masonry units on wood pallets.

C. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.

D. Metals: Separate metals by type.
   1. Structural Steel: Stack members according to size, type of member, and length.

2. Remove and dispose of bolts, nuts, washers, and other rough hardware.

E. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.

F. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.

G. Metal Suspension System: Separate metal members including trim, and other metals from acoustical panels and tile and sort with other metals.

H. Carpet: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.
1. Store clean, dry carpet in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.

I. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.

J. Conduit: Reduce conduit to straight lengths and store by type and size.

3.5 DISPOSAL OF WASTE

A. Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Disposal: Transport waste materials off Owner's property and legally dispose of them.

END OF SECTION

Section 01 7419 Construction Waste Management and Disposal

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for the following:
   1. Salvaging nonhazardous demolition waste.
   2. Recycling nonhazardous demolition waste.
   3. Disposing of nonhazardous demolition waste.

B. Related Sections:
   1. Division 02 Section "Selective Demolition" for disposition of waste resulting from partial demolition of buildings, structures, and site improvements, and for disposition of hazardous waste.

1.2 DEFINITIONS

A. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

B. Disposal: Removal off-site of demolition waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

C. Recycle: Recovery of demolition waste for subsequent processing in preparation for reuse.

D. Salvage: Recovery of demolition waste and subsequent sale or reuse in another facility.

E. Salvage and Reuse: Recovery of demolition waste and subsequent incorporation into the Work.

1.3 ACTION SUBMITTALS

A. Waste Management Plan: Submit plan within 7 days of date established for commencement of the Work.

1.4 INFORMATIONAL SUBMITTALS

A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report for demolition waste. Include the following information:
   1. Material category.
   2. Generation point of waste.
   3. Total quantity of waste in tons (tonnes).
   4. Quantity of waste salvaged, both estimated and actual in tons (tonnes).
   5. Quantity of waste recycled, both estimated and actual in tons (tonnes).
   6. Total quantity of waste recovered (salvaged plus recycled) in tons (tonnes).
   7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

C. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

D. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

E. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

F. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

G. Qualification Data: For waste management coordinator and refrigerant recovery technician.

H. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.5 QUALITY ASSURANCE

A. Waste Management Coordinator Qualifications: Experienced firm, with a record of successful waste management coordination of Projects with similar requirements.

B. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

C. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

D. Waste Management Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:
   1. Review and discuss waste management plan including responsibilities of waste management coordinator.
   2. Review requirements for documenting quantities of each type of waste and its disposition.
   3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
   4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
   5. Review waste management requirements for each trade.

1.6 WASTE MANAGEMENT PLAN

A. Develop a waste management plan according to ASTM E 1609 and requirements of this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.

B. Waste Identification: Indicate anticipated types and quantities of demolition waste generated by the Work. Include estimated quantities and assumptions for estimates.

C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
   1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
   2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
   3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
   4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
   5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
   6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be located.

D. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there was no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Include the following:
   1. Total quantity of waste.
   2. Estimated cost of disposal (cost per unit). Include hauling and tipping fees and cost of collection containers for each type of waste.
   3. Total cost of disposal (with no waste management).
   4. Revenue from salvaged materials.
   5. Revenue from recycled materials.
   6. Savings in hauling and tipping fees by donating materials.
   7. Savings in hauling and tipping fees that are avoided.
   8. Handling and transportation costs. Include cost of collection containers for each type of waste.
   9. Net additional cost or net savings from waste management plan.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
   1. Comply with Division 01 Section "Temporary Facilities and Controls" for operation, termination, and removal requirements.

B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan.

C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.
   1. Distribute waste management plan to everyone concerned within three days of submittal return.
   2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
   1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
   2. Comply with Division 01 Section "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 SALVAGING DEMOLITION WASTE

A. Salvaged Items for Reuse in the Work: Salvage items for reuse and handle as follows:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until installation.
   4. Protect items from damage during transport and storage.
   5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.

B. Salvaged Items for Sale and Donation: Not permitted on Project site.

C. Salvaged Items for Owner's Use: Salvage items for Owner's use and handle as follows:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until delivery to Owner.
   4. Transport items to Owner's storage area designated by Owner.
   5. Protect items from damage during transport and storage.

D. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.

E. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.

F. Plumbing Fixtures: Separate by type and size.

G. Lighting Fixtures: Separate lamps by type and protect from breakage.

H. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.

3.3 RECYCLING DEMOLITION WASTE, GENERAL

A. Recycle paper and beverage containers used by on-site workers.

B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall be shared equally by Owner and Contractor.

C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.

D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved waste management plan.
   1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
      a. Inspect containers and bins for contamination and remove contaminated materials if found.
   2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
   3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
   4. Store components off the ground and protect from the weather.
   5. Remove recyclable waste off Owner's property and transport to recycling receiver or processor.

3.4 RECYCLING DEMOLITION WASTE

A. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.
   1. Pulverize concrete to maximum 4-inch (100-mm) size.

B. Masonry: Remove metal reinforcement, anchors, and ties from masonry and sort with other metals.
   1. Pulverize masonry to maximum 4-inch (100-mm) size.
   2. Clean and stack undamaged, whole masonry units on wood pallets.

C. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.

D. Metals: Separate metals by type.
   1. Structural Steel: Stack members according to size, type of member, and length.

2. Remove and dispose of bolts, nuts, washers, and other rough hardware.

E. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.

F. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.

G. Metal Suspension System: Separate metal members including trim, and other metals from acoustical panels and tile and sort with other metals.

H. Carpet: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.
1. Store clean, dry carpet in a closed container or trailer provided by Carpet Reclamation Agency or carpet recycler.

I. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.

J. Conduit: Reduce conduit to straight lengths and store by type and size.

3.5 DISPOSAL OF WASTE

A. Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Disposal: Transport waste materials off Owner's property and legally dispose of them.

END OF SECTION

FORM CWM-1: CONSTRUCTION WASTE IDENTIFICATION

MATERIAL DESCRIPTION	EST. QUANTITY	EST. VOLUME CY (CM)	EST. WEIGHT TONS (TONNES)	REMARKS AND ASSUMPTIONS
Asphaltic Concrete Paving				
Concrete				
Brick				
CMU				
Lumber				
Plywood and OSB				
Wood Paneling				
Wood Trim				
Miscellaneous Metals				
Structural Steel				
Rough Hardware				
Insulation				
Roofing				
Doors and Frames				
Door Hardware				
Windows				
Glazing				
Acoustical Tile				
Carpet				
Carpet Pad				
Demountable Partitions				
Equipment				
Cabinets				
Plumbing Fixtures				
Piping				
Piping Supports and Hangers				
Valves				
Sprinklers				
Mechanical Equipment				
Electrical Conduit				
Copper Wiring				
Light Fixtures				
Lamps				
Lighting Ballasts				
Electrical Devices				
Switchgear and Panelboards				
Transformers				
Other:				

FORM CWM-2: DEMOLITION WASTE IDENTIFICATION				
MATERIAL DESCRIPTION	EST. QUANTITY	EST. VOLUME CY (CM)	EST. WEIGHT TONS (TONNES)	REMARKS AND ASSUMPTIONS
Asphaltic Concrete Paving				
Concrete				
Brick				
CMU				
Lumber				
Plywood and OSB				
Wood Paneling				
Wood Trim				
Miscellaneous Metals				
Structural Steel				
Rough Hardware				
Insulation				
Roofing				
Doors and Frames				
Door Hardware				
Windows				
Glazing				
Acoustical Tile				
Carpet				
Carpet Pad				
Demountable Partitions				
Equipment				
Cabinets				
Plumbing Fixtures				
Piping				
Piping Supports and Hangers				
Valves				
Sprinklers				
Mechanical Equipment				
Electrical Conduit				
Copper Wiring				
Light Fixtures				
Lamps				
Lighting Ballasts				
Electrical Devices				
Switchgear and Panelboards				
Transformers				
Other:				

FORM CWM-3: CONSTRUCTION WASTE REDUCTION WORK PLAN

MATERIAL CATEGORY	GENERATION POINT	TOTAL EST. QUANTITY OF WASTE TONS (TONNES)	DISPOSAL METHOD AND QUANTITY			HANDLING AND TRANSPORTION PROCEDURES
			EST. AMOUNT SALVAGED TONS (TONNES)	EST. AMOUNT RECYCLED TONS (TONNES)	EST. AMOUNT DISPOSED TO LANDFILL TONS (TONNES)	
Asphaltic Concrete Paving						
Concrete						
Brick						
CMU						
Lumber						
Plywood and OSB						
Wood Paneling						
Wood Trim						
Miscellaneous Metals						
Structural Steel						
Rough Hardware						
Insulation						
Roofing						
Doors and Frames						
Door Hardware						
Windows						
Glazing						
Acoustical Tile						
Carpet						
Carpet Pad						
Demountable Partitions						
Equipment						
Cabinets						
Plumbing Fixtures						
Piping						
Supports and Hangers						
Valves						
Sprinklers						
Mechanical Equipment						
Electrical Conduit						
Copper Wiring						
Light Fixtures						
Lamps						
Lighting Ballasts						
Electrical Devices						
Switchgear and Panelboards						
Transformers						
Other:						

FORM CWM-4: DEMOLITION WASTE REDUCTION WORK PLAN

MATERIAL CATEGORY	GENERATION POINT	TOTAL EST. QUANTITY OF WASTE TONS (TONNES)	DISPOSAL METHOD AND QUANTITY			HANDLING AND TRANSPORTION PROCEDURES
			EST. AMOUNT SALVAGED TONS (TONNES)	EST. AMOUNT RECYCLED TONS (TONNES)	EST. AMOUNT DISPOSED TO LANDFILL TONS (TONNES)	
Asphaltic Concrete Paving						
Concrete						
Brick						
CMU						
Lumber						
Plywood and OSB						
Wood Paneling						
Wood Trim						
Miscellaneous Metals						
Structural Steel						
Rough Hardware						
Insulation						
Roofing						
Doors and Frames						
Door Hardware						
Windows						
Glazing						
Acoustical Tile						
Carpet						
Carpet Pad						
Demountable Partitions						
Equipment						
Cabinets						
Plumbing Fixtures						
Piping						
Supports and Hangers						
Valves						
Sprinklers						
Mechanical Equipment						
Electrical Conduit						
Copper Wiring						
Light Fixtures						
Lamps						
Lighting Ballasts						
Electrical Devices						
Switchgear and Panelboards						
Transformers						
Other:						

FORM CWM-5: COST/REVENUE ANALYSIS OF CONSTRUCTION WASTE REDUCTION WORK PLAN

MATERIALS	TOTAL QUANTITY OF MATERIALS (VOL. OR WEIGHT) (A)	EST. COST OF DISPOSAL (B)	TOTAL EST. COST OF DISPOSAL (C = A x B)	REVENUE FROM SALVAGED MATERIALS (D)	REVENUE FROM RECYCLED MATERIALS (E)	LANDFILL TIPPING FEES AVOIDED (F)	HANDLING AND TRANSPORTATION COSTS AVOIDED (G)	NET COST SAVINGS OF WORK PLAN (H = D+E+F+G)
Asphaltic Concrete Paving								
Concrete								
Brick								
CMU								
Lumber								
Plywood and OSB								
Wood Paneling								
Wood Trim								
Miscellaneous Metals								
Structural Steel								
Rough Hardware								
Insulation								
Roofing								
Doors and Frames								
Door Hardware								
Windows								
Glazing								
Acoustical Tile								
Carpet								
Carpet Pad								
Demountable Partitions								
Equipment								
Cabinets								
Plumbing Fixtures								
Piping								
Supports and Hangers								
Valves								
Sprinklers								
Mech. Equipment								
Electrical Conduit								
Copper Wiring								
Light Fixtures								
Lamps								
Lighting Ballasts								
Electrical Devices								
Switchgear and Panelboards								
Transformers								

FORM CWM-6: COST/REVENUE ANALYSIS OF DEMOLITION WASTE REDUCTION WORK PLAN

MATERIALS	TOTAL QUANTITY OF MATERIALS (VOL. OR WEIGHT) (A)	EST. COST OF DISPOSAL (B)	TOTAL EST. COST OF DISPOSAL (C = A x B)	REVENUE FROM SALVAGED MATERIALS (D)	REVENUE FROM RECYCLED MATERIALS (E)	LANDFILL TIPPING FEES AVOIDED (F)	HANDLING AND TRANSPORTATION COSTS AVOIDED (G)	NET COST SAVINGS OF WORK PLAN (H = D+E+F+G)
Asphaltic Concrete Paving								
Concrete								
Brick								
CMU								
Lumber								
Plywood and OSB								
Wood Paneling								
Wood Trim								
Miscellaneous Metals								
Structural Steel								
Rough Hardware								
Insulation								
Roofing								
Doors and Frames								
Door Hardware								
Windows								
Glazing								
Acoustical Tile								
Carpet								
Carpet Pad								
Demountable Partitions								
Equipment								
Cabinets								
Plumbing Fixtures								
Piping								
Supports and Hangers								
Valves								
Sprinklers								
Mech. Equipment								
Electrical Conduit								
Copper Wiring								
Light Fixtures								
Lamps								
Lighting Ballasts								
Electrical Devices								
Switchgear and Panelboards								
Transformers								

FORM CWM-7: CONSTRUCTION WASTE REDUCTION PROGRESS REPORT

MATERIAL CATEGORY	GENERATION POINT	TOTAL QUANTITY OF WASTE TONS (TONNES) (A)	QUANTITY OF WASTE SALVAGED		QUANTITY OF WASTE RECYCLED		TOTAL QUANTITY OF WASTE RECOVERED TONS (TONNES) (D = B + C)	TOTAL QUANTITY OF WASTE RECOVERED % (D / A x 100)
			ESTIMATED TONS (TONNES)	ACTUAL TONS (TONNES) (B)	ESTIMATED TONS (TONNES)	ACTUAL TONS (TONNES) (C)		
Asphaltic Concrete Paving								
Concrete								
Brick								
CMU								
Lumber								
Plywood and OSB								
Wood Paneling								
Wood Trim								
Miscellaneous Metals								
Structural Steel								
Rough Hardware								
Insulation								
Roofing								
Doors and Frames								
Door Hardware								
Windows								
Glazing								
Acoustical Tile								
Carpet								
Carpet Pad								
Demountable Partitions								
Equipment								
Cabinets								
Plumbing Fixtures								
Piping								
Supports and Hangers								
Valves								
Sprinklers								
Mechanical Equipment								
Electrical Conduit								
Copper Wiring								
Light Fixtures								
Lamps								
Lighting Ballasts								
Electrical Devices								
Switchgear and Panelboards								
Transformers								
Other:								

FORM CWM-8: DEMOLITION WASTE REDUCTION PROGRESS REPORT

MATERIAL CATEGORY	GENERATION POINT	TOTAL QUANTITY OF WASTE TONS (TONNES) (A)	QUANTITY OF WASTE SALVAGED		QUANTITY OF WASTE RECYCLED		TOTAL QUANTITY OF WASTE RECOVERED TONS (TONNES) (D = B + C)	TOTAL QUANTITY OF WASTE RECOVERED % (D / A x 100)
			ESTIMATED TONS (TONNES)	ACTUAL TONS (TONNES) (B)	ESTIMATED TONS (TONNES)	ACTUAL TONS (TONNES) (C)		
Asphaltic Concrete Paving								
Concrete								
Brick								
CMU								
Lumber								
Plywood and OSB								
Wood Paneling								
Wood Trim								
Miscellaneous Metals								
Structural Steel								
Rough Hardware								
Insulation								
Roofing								
Doors and Frames								
Door Hardware								
Windows								
Glazing								
Acoustical Tile								
Carpet								
Carpet Pad								
Demountable Partitions								
Equipment								
Cabinets								
Plumbing Fixtures								
Piping								
Supports and Hangers								
Valves								
Sprinklers								
Mechanical Equipment								
Electrical Conduit								
Copper Wiring								
Light Fixtures								
Lamps								
Lighting Ballasts								
Electrical Devices								
Switchgear and Panelboards								
Transformers								
Other:								

Section 01 7700 Closeout Procedures

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.

1.2 DESCRIPTION OF WORK

A. The Work of this Section includes, but is not limited to, requirements for the following procedures:

1. Final cleaning.
2. Temporary and trial usage.
3. Warranties and bonds.
4. Closeout requirements.
5. Inspection and Submittals for Substantial Completion.
6. Monetized Punch List Inspections.
7. Final Inspection and Submittals.
8. Final application and certificate for payment.
9. Post-construction inspection.

B. Related Work includes, but is not limited to, the following Work under other Sections:

1. Dates for Substantial Completion and Final Completion: Section 002113 – INSTRUCTIONS TO BIDDERS.
2. Procedures related to Architect's additional services if required to complete closeout of Project: Section 011400 – WORK RESTRICTIONS
3. Construction schedule requirements: Section 013200 – CONSTRUCTION PROGRESS DOCUMENTATION.
4. Temporary facilities to be removed at the end of the Project: Section 015000 – TEMPORARY FACILITIES AND CONTROLS.
5. Documents to be submitted as part of Closeout Requirements: Section 017839 – PROJECT RECORD DOCUMENTS

1.3 SUBMITTALS

A. Warranties and Bonds: As specified herein.

B. Punch Lists: As specified herein.

C. Submittals for Substantial Completion: As specified herein.

D. Final Submittals: As specified herein.

PART 2 - PRODUCTS

2.1 Cleaning materials

A. Refer to Section 011400 - WORK RESTRICTIONS for cleaning materials.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. Before final inspection, thoroughly clean the entire exterior and interior areas of the building where construction work has been performed, the immediate surrounding areas, and corridors, stairs, halls, storage areas, temporary offices, and toilets.

1. Allow adequate time in Construction Schedule to perform thorough final cleaning of entire Project.

B. Refer to Section 011400 - WORK RESTRICTIONS for general requirements for cleaning and for cleaning products, and refer to individual specification sections for cleaning requirements for particular products.

C. Employ experienced workmen or professional cleaners for final cleaning operations.

D. Remove all construction facilities, debris, and rubbish from the Owner's property and legally dispose of same beyond site limits.

E. Broom clean exterior paved surfaces, and rake clean other surfaces of the grounds.

F. Sweep, dust, wash, and polish all finished surfaces. This includes cleaning of the Work of all finished trades where needed, whether or not cleaning for such trades is included in their respective Sections.

G. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from exposed interior and exterior surfaces.

H. Leave pipe and duct spaces, chases, and furred spaces thoroughly clean.

I. Wash and polish all new glass on both sides, such Work shall be performed by a contractor specializing in a window cleaning work.

J. Clean all ceilings, wall surfaces, floors, window and door frames, hardware, metal work, glass, glazing, enameled metals, and the like.

K. Repair, patch and touchup marred surfaces to specified finish, to match adjacent surfaces.

L. Each Subcontractor for mechanical and electrical work, including Plumbing, HVAC, Fire Protection, and Electrical Work shall clean materials and equipment for which they are responsible, leaving the Work in a finished and clean state.

M. For each mechanical unit that has been in operation during construction, Contractor shall clean permanent filters and replace disposable filters with new filters as specified for that mechanical unit, and shall also clean ducts, blowers and coils associated with that unit.

N. Prior to final completion, Contractor shall conduct an inspection of sight-exposed interior and exterior surfaces and all work areas, to verify that the entire Work is clean.

O. Owner will assume responsibility for cleaning as of time designated on Certificate of Substantial Completion for Owner's acceptance of Work or portion thereof.

3.2 TEMPORARY AND TRIAL USAGE

A. Temporary or trial usage by Owner of any mechanical device, machinery, apparatus, equipment, or any Work or materials supplied under the Contract before final completion and written acceptance by the Architect shall not be construed as evidence of acceptance as same.

B. The Owner reserves the privilege of such temporary or trial usage for such reasonable time as

required to properly test such item. Claims for damages due to injury to or breaking of any parts of such Work, when the determined cause is weakness or inaccuracy of structural parts, defective material or workmanship, will not be allowed.

C. If the Owner so requests, place an approved person or persons to instruct and assist in such trial usage and bear the costs therefore. Trials shall be made under the Architect's supervision.

3.3 WARRANTIES AND BONDS

A. Compile specified warranties and bonds, review to verify compliance with Contract Documents, and submit to Architect for review and subsequent transmittal, if approved, to the Owner.

B. Assemble two original signed copies of warranties, bonds and service and maintenance contracts executed by Officers of each of the respective manufacturers, suppliers and subcontractors.

C. Neatly type Table of Contents in orderly sequence. Provide complete information for each item:

1. Product or work item identification.
2. Manufacturing or supplying firm, with name of principal, address and telephone number.
3. Scope of work and of warranty provided.
4. Date of beginning of warranty, bond or service and maintenance contract. Commence upon date of Substantial Completion.
5. Duration of warranty, bond or service maintenance contract. (In no case less than one (1) year).
6. Information for Owner's personnel:

    a. Proper procedure in case of failure.
    b. Instances which might affect validity of warranty or bond.

7. Contractor, name of responsible principal, address and telephone number.

D. Form of Submittals: Prepare in duplicate packets and in the following format:

1. Size: 8-1/2" x 11". Punch sheets for 3-ring binder. Z-Fold larger sheets to fit into binders.
2. Cover: Identify each packet with types or printed title "WARRANTIES AND BONDS". List Title of Project, Date and Name of Contractor.
3. Binders: Commercial quality, three-”D”-ring, with durable and cleanable plastic covers.

E. Time of Submittals:

1. For equipment or component parts of equipment put into service during progress of construction, submit documents within ten (10) days after inspection and acceptance. Otherwise, make submittals before Date of Substantial Completion.
2. For items of Work where acceptance is delayed materially beyond the Date of Substantial Completion, provide updated submittal within ten days after acceptance, listing the date of acceptance as the start of the warranty period.

F. Submittals Required: Submit warranties, bond, service and maintenance contracts as specified in the respective Sections of the Specifications.

3.4 CLOSEOUT REQUIREMENTS

A. Punch List: When the Contractor submits a complete list of items to be completed or corrected in accordance with subparagraph 9.8.2 of the GENERAL CONDITIONS and the Architect receives the list, the Architect will make an inspection to determine whether the Work or designated portion is substantially complete. The Contractor shall submit a schedule indicating when each item will be completed.

B. If the Architect determines that the Contractor's list is not complete, the Architect will notify the Contractor. The Contractor shall provide a complete list before the Architect will complete his inspection.

C. If the Architect's inspection discloses any item whether or not included on the Contractor's list, which is not in accordance with the requirements of the Contract Documents, the Architect will add the item to the list and will issue a punch list of items to be completed or corrected before final payment will be made. Such punch list shall not be construed as all-inclusive of the work which the Contractor will be required to perform before final payment.

D. Substantial Completion: Architect will prepare and issue a Certificate of Substantial Completion, AIA G704, complete with signatures of Owner and Contractor, accompanied by list of items to be completed or corrected, as verified and amended by the Architect. Architect will not issue certificates of Substantial Completion until the items listed below in Articles 3.05 and 3.06 have been completed and submitted.

3.5 INSPECTION FOR SUBSTANTIAL COMPLETION

A. In preparation for Substantial Completion, the Contractor shall submit written certification that:

1. Contract Documents have been reviewed.
2. Work has been inspected for compliance with Contract Documents.
3. Work has been completed in accordance with Contract Documents.

4. Equipment and systems have been tested in presence of Owner's Representative and are operational.
5. Testing and verification by the commissioning agent is complete.
6. Work is completed, and ready for inspection.

B. Architect will begin inspection within seven (7) days after receipt of above referenced Contractor's Certification.

C. Should the Architect consider the Work is substantially complete in accordance with requirements of Contract Documents, the Architect will request Contractor to make Project Closeout submittals.

D. Should the Architect consider that the Work is not substantially complete:

1. The Architect will notify Contractor, in writing, stating reasons.
2. Contractor shall take immediate steps to remedy the stated deficiencies, and send second written notice to the Architect certifying that the Work is complete.

3.6 SUBMITTALS FOR SUBSTANTIAL COMPLETION

A. Contractor shall submit the following items at Substantial Completion:

1. Operating and Maintenance Data.
2. Schedule for training and instruction on new mechanical and electrical systems.
3. Guarantees and Warranties.
4. Keys and keying schedule.
5. Spare Parts and Maintenance Materials.
6. Roofing Guarantee and Flashing Endorsement.
7. Evidence of Compliance with requirements of governing authorities.
8. Punch list with schedule.
9. Final Record Documents

B. Evidence of compliance with authorities' requirements shall include:

1. Certificates of Inspection:
2. Submit Certificate of Insurance for products and completed operations.

3.7 MONETIZED PUNCHLIST INSPECTIONS

A. Within 30 days of Substantial Completion, the Architect will produce a Monetized Punch List that assigns a monetary value to each item remaining incomplete or incorrect.

B. The Contractor may request two inspections by the Architect after receipt of the Monetized Punch List, for the purpose of documenting progress toward completion of items on the List.

1. If the Architect is required to inspect the Work more than twice prior to establishment of Final Completion, the Contractor shall be responsible to the Owner for costs for Additional Services of the Architect to perform additional inspections, until the Work is considered Finally Complete.
2. Refer to Section 011400 WORK RESTRICTIONS, for procedures required in cases where Contractor is responsible for costs for Additional Services of the Architect.

3.8 FINAL INSPECTION

A. The Contractor shall complete or correct all remaining items on the Monetized Punch List in accordance with the time limits stated in the General Conditions.

B. Certification of Final Completion: When the Contractor considers that all of the items on the Monetized Punch List have been completed or corrected, the Contractor shall submit written certification that the items on the Monetized Punch List have been completed and corrected. This certification shall include a copy of the Monetized Punch List with the following information added:

1. Indicate beside each item the date when the item was completed or corrected and,
2. In the case of items completed by subcontractors or sub-subcontractors, the name of the Subcontractor or Sub-subcontractor.

C. The Architect will begin inspection within seven (7) days after receipt of such certification, to determine whether items on the Punch List have been completed.

1. Should the Architect determine that the Work is not complete after receipt of the certification of Final Completion, the Contractor shall be responsible to the Owner for costs for Additional Services of the Architect to perform additional inspections, until all items on the Punch List are completed.
2. Refer to Section 011400 WORK RESTRICTIONS, for procedures required in cases where Contractor is responsible for costs for Additional Services of the Architect.

3.9 FINAL SUBMITTALS

A. Contractor's Affidavit of Payment of Debts and Claims, AIA G706.

B. Contractor's Affidavit of Release of Liens, AIA G706A, with:

1. Consent of Surety to Final Payment: AIA G707.
2. Contractor's release or waiver of liens.
3. Separate releases or waivers of liens for subcontractors, suppliers and others with lien rights against property of Owner, together with list of those parties.

C. All submittals shall be duly executed before delivery to the Architect.

3.10 FINAL APPLICATION AND CERTIFICATE FOR PAYMENT

A. Contractor shall submit final application for payment in accordance with requirements of the GENERAL CONDITIONS.

B. Architect will issue final certificate in accordance with provisions of Conditions of the Contract.

C. Prior to issuance of the Certificate for Final Payment by the Architect, all requirements contained in this Paragraph entitled "Closeout Requirements" and other requirements of the Conditions of the Contract shall be executed, received and approved by the Architect.

3.11 POST-CONSTRUCTION INSPECTION

A. Prior to expiration of one year from Date of Substantial Completion, the Owner's Project Manager will make visual inspection of Work in company with Owner and Contractor to determine whether correction of Work is required, in accordance with provisions of GENERAL CONDITIONS.

B. For guarantees beyond one year, the Owner's Project Manager will make inspection at request of Owner after notification to Contractor.

C. Owner's Project Manager will promptly notify Contractor in writing of any observed deficiencies.

END OF SECTION

Section 01 7823 Operation and Maintenance Data

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
   1. Operation and maintenance documentation directory manuals.
   2. Emergency manuals.
   3. Systems and equipment operation manuals.
   4. Systems and equipment maintenance manuals.
   5. Product maintenance manuals.

B. Related Requirements:
   1. Section 01 3300 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
   2. Section 01 7836 “Warranties" for copies of warranties to be included in operation and maintenance manuals.
   3. Divisions 02 through 33 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.3 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
   1. Architect and Commissioning Authority will comment on whether content of operation and maintenance submittals is acceptable.
   2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

B. Format: Submit operation and maintenance manuals in the following format:
   1. Submit on digital media acceptable to Architect. Enable reviewer comments on draft submittals.

C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Architect and Commissioning Authority will comment on whether general scope and content of manual are acceptable.

D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect and Commissioning Authority will return copy with comments.
   1. Correct or revise each manual to comply with Architect's and Commissioning Authority's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's and Commissioning Authority's comments and prior to commencing demonstration and training.

E. Comply with Section 01 7700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

1.5 FORMAT OF OPERATION AND MAINTENANCE MANUALS

A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
   1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
   2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

1.6 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
   1. Title page.
   2. Table of contents.
   3. Manual contents.

B. Title Page: Include the following information:
   1. Subject matter included in manual.
   2. Name and address of Project.
   3. Name and address of Owner.
   4. Date of submittal.
   5. Name and contact information for Contractor.
   6. Name and contact information for Architect.
   7. Name and contact information for Commissioning Authority.
   8. Names and contact information for major consultants to the Architect that designed the systems contained in the manuals.
   9. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

D. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

1.7 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY MANUAL

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals. List items and their location to facilitate ready access to desired information. Include the following:
1. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
2. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
3. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

1.8 EMERGENCY MANUALS

A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

B. Content: Organize manual into a separate section for each of the following:
1. Type of emergency.
2. Emergency instructions.
3. Emergency procedures.

C. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
1. Fire.
2. Flood.
3. Gas leak.
4. Water leak.
5. Power failure.
6. Water outage.
7. System, subsystem, or equipment failure.
8. Chemical release or spill.

D. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

E. Emergency Procedures: Include the following, as applicable:
1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.

4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

1.9 SYSTEMS AND EQUIPMENT OPERATION MANUALS

A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.
   1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
   2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
   1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
   2. Performance and design criteria if Contractor has delegated design responsibility.
   3. Operating standards.
   4. Operating procedures.
   5. Operating logs.
   6. Wiring diagrams.
   7. Control diagrams.
   8. Piped system diagrams.
   9. Precautions against improper use.
   10. License requirements including inspection and renewal dates.

C. Descriptions: Include the following:
   1. Product name and model number. Use designations for products indicated on Contract Documents.
   2. Manufacturer's name.
   3. Equipment identification with serial number of each component.
   4. Equipment function.
   5. Operating characteristics.
   6. Limiting conditions.
   7. Performance curves.
   8. Engineering data and tests.
   9. Complete nomenclature and number of replacement parts.

D. Operating Procedures: Include the following, as applicable:
   1. Startup procedures.
   2. Equipment or system break-in procedures.
   3. Routine and normal operating instructions.
   4. Regulation and control procedures.
   5. Instructions on stopping.
   6. Normal shutdown instructions.
   7. Seasonal and weekend operating instructions.
   8. Required sequences for electric or electronic systems.
   9. Special operating instructions and procedures.

E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

F. Piped Systems: Diagram piping as installed, and identify color coding where required for identification.

1.10 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.
1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

B. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranties and bonds as described below.

C. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

D. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:
1. Standard maintenance instructions and bulletins; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

E. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training video recording, if available.

F. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

G. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

H. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

I. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

J. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
1. Do not use original project record documents as part of maintenance manuals.

1.11 PRODUCT MAINTENANCE MANUALS

A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

B. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

C. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.

D. Product Information: Include the following, as applicable:
1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
4. Material and chemical composition.
5. Reordering information for specially manufactured products.

E. Maintenance Procedures: Include manufacturer's written recommendations and the following:
1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

F. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
   1. Include procedures to follow and required notifications for warranty claims.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

Section 01 7836 Warranties

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes general requirements for warranties and guarantees.

B. Related Requirements:
1. Section 01 7700 "Closeout Procedures" for general closeout procedures.
2. Section 01 7823 "Operation and Maintenance Data" for copies of warranties to be included in operation and maintenance manuals.
3. Divisions 02 thru 33 Sections for specific product warranty requirements.

1.3 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Provide additional copies of each warranty to include in operation and maintenance manuals.

1.4 WARRANTIES

A. Warranty Starting Dates:
1. Exception for Incomplete Work: Warranty starting date for work not completed by the Date of Substantial Completion shall be the date of final completion and acceptance of the work.
2. Warranty Duration: As specified for each warranty, warranties shall start upon the Date of Substantial Completion for the entire project, in the case of a phased project warranties shall not commence on the date of phase completions. Warranties shall extend for the specified warranty period after the Date of Substantial Completion.
3. Under no circumstances shall warranties commence on the date of purchase by any contractor or trade sub-bidder or delivery of any product or piece of equipment to site.

B. Extended Warranties: When commencement of warranties is other than the date of Substantial Completion, extend the warranty periods as required to still provide the full warranty periods specified from date of Substantial Completion.

C. Owner's Rights: Warranties required under the Contract are in addition to and not in lieu of any remedy or warranty to which Owner is entitled under law. Warranties required under the Contract are not a waiver of any of Owner's rights.

D. Warranty Forms: Warranty forms are subject to Owner's pre-approval.
   1. Submit warranty forms and obtain approval prior to procuring work covered by the warranty.
   2. Contract Documents may require special warranty terms and conditions which are not normal or standard for the manufacturer.

E. Procurement: Do not procure materials, products, equipment, or work requiring warranties until confirmation that required warranties will be provided. Remove and replace materials, products, equipment, and work for which the required warranties are not available.

F. Warranties are Irrevocable: Warranties issued to Owner are irrevocable.
   1. Non Payment: If warrantor refuses to issue warranty or attempts to revoke warranty due to non-payment by anyone other than Owner, Contractor shall rectify the non-payment issue and cause the warranty to be issued or reinstated.
   2. Improper Installation: If warrantor refuses to issue warranty or attempts to revoke warranty due to improper installation or other deficiency, Contractor shall correct the deficiency and cause the warranty to be issued or reinstated.

G. Warranties are Transferable: All warranties shall permit Owner to transfer or assign warranties to future owners or other assigns at no additional cost to Owner.

H. Pro-Rated Warranties: Unless indicated otherwise, pro-rated warranties are not acceptable. Each warranty shall cover the full cost of warranty related repair throughout the full term of the warranty.

I. Warranty Repairs Covered By Warranty: Work repaired or replaced under warranty shall be warranted for the full duration of the original warranty.

J. Warranty Submission: Furnish originals of each executed warranty to Owner.
   1. All warranties shall be complete, signed, conformed, and legally binding.
   2. Submit a three ring bound compilation of all warranties including the comprehensive total Contract warranty and each required long term warranty.

K. Warrantor's Failure To Perform: If Warrantor fails to perform their obligations under the warranty, Owner may perform or elect to hire another entity to perform the warrantor's obligations. Owner may recover its costs and damages from the warrantor in any court of competent jurisdiction.

1.5 COMPREHENSIVE, TOTAL CONTRACT WARRANTY

A. In addition to specific long term warranties which may be required in individual specification Sections, provide a Comprehensive Total Contract Warranty covering all work, materials, equipment, and labor of the entire Contract.

B. Comprehensive, Total Contract Warranty Duration: One year from Date of Substantial Completion.

C. Consequential Damages and Work: The Comprehensive Total Contract Warranty shall include all consequential damages including, without limitation:
   1. Work required to uncover, repair, restore, and recover work repaired under warranty.
   2. All adjacent and related work to provide access to the warranted work.
   3. Repair, replacement, and restitution of property damaged by failure of warranted work.

D. Warranty Claims During Comprehensive Total Contract Warranty: Owner will notify Contractor in writing of each warranty claim. Contractor shall make repairs within 30 days after receipt of Owner's claim, unless preapproved by Owner.

E. Contractor's Obligation During the Comprehensive Total Contract Warranty: At no additional cost to Owner, Contractor shall:
   1. Notify in writing each affected warrantor and original subcontractor, installer and supplier, if any.
   2. Manage the warranty claim for Owner's benefit.
   3. Assist Owner in obtaining warranty satisfaction.
   4. Arrange and manage warranty related work including work related to consequential damages.

F. Expiration of Comprehensive Total Contract Warranty: Approximately 30 days prior to expiration of the Comprehensive Total Contract Warranty, Owner will create a Warranty Repair List. Contractor shall make repairs within 30 days after receipt of Owner's list, unless preapproved by Owner.

G. Contractor's Failure to Perform During Comprehensive Total Contract Warranty: If Contractor fails to remedy work covered by the Comprehensive Total Contract Warranty, Owner may perform or may hire another entity to perform the warrantor's obligations and Contractor shall reimburse Owner for Owner's total costs including, without limitation, management costs.

PART 2 - PRODUCTS (not applicable)

PART 3 - EXECUTION (not applicable)

END OF SECTION

Section 01 7839 Project Record Documents

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for project record documents, including the following:
   1. Record Drawings.
   2. Record Specifications.
   3. Record Product Data.
   4. Miscellaneous record submittals.

B. Related Requirements:
   1. Section 01 7700 "Closeout Procedures" for general closeout procedures.
   2. Section 01 7823 "Operation and Maintenance Data" for operation and maintenance manual requirements.
   3. Divisions 02 through 33 Sections for specific requirements for project record documents of the Work in those Sections.

1.3 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:
   1. Number of Copies: Submit copies of record Drawings as follows:
      a. Initial Submittal:
         1) Submit one paper-copy set of marked-up record prints.
         2) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
      b. Final Submittal:
         1) Submit record digital data files and three sets of record digital data file plots.
         2) Plot each drawing file, whether or not changes and additional information were recorded.

B. Record Specifications: Submit annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit annotated PDF electronic files and directories of each submittal.
   1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

D. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit annotated PDF electronic files and directories of each submittal.

E. Reports: Submit written report weekly indicating items incorporated into project record documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

1.4 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.
   1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
      a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
      b. Accurately record information in an acceptable drawing technique.
      c. Record data as soon as possible after obtaining it.
      d. Record and check the markup before enclosing concealed installations.
      e. Cross-reference record prints to corresponding photographic documentation.
   2. Content: Types of items requiring marking include, but are not limited to, the following:
      a. Dimensional changes to Drawings.
      b. Revisions to details shown on Drawings.
      c. Depths of foundations.
      d. Locations and depths of underground utilities.
      e. Revisions to routing of piping and conduits.
      f. Revisions to electrical circuitry.
      g. Actual equipment locations.
      h. Duct size and routing.
      i. Locations of concealed internal utilities.
      j. Changes made by Change Order or Construction Change Directive.
      k. Changes made following Architect's written orders.
      l. Details not on the original Contract Drawings.
      m. Field records for variable and concealed conditions.
      n. Record information on the Work that is shown only schematically.
   3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
   4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
   5. Mark important additional information that was either shown schematically or omitted from original Drawings.
   6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
   1. Format: Same digital data software program, version, and operating system as the original Contract Drawings.
   2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
   3. Refer instances of uncertainty to Architect for resolution.
   4. Architect will furnish Contractor with one set of digital data files of the Contract Drawings for use in recording information.

a. See Section 01 3100 "Project Management and Coordination" for requirements related to use of Architect's digital data files.
b. Architect will provide data file layer information. Record markups in separate layers.

C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
2. Identification: As follows:
a. Project name.
b. Date.
c. Designation "PROJECT RECORD DRAWINGS."
d. Name of Architect.
e. Name of Contractor.

1.5 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
5. Note related Change Orders, record Product Data, and record Drawings where applicable.

B. Format: Submit record Specifications as annotated PDF electronic file.

1.6 RECORD PRODUCT DATA

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, record Specifications, and record Drawings where applicable.

C. Format: Submit record Product Data as annotated PDF electronic file.
1. Include record Product Data directory organized by Specification Section number and title, electronically linked to each item of record Product Data.

1.7 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

B. Format: Submit miscellaneous record submittals as PDF electronic file.
   1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

1.8 MAINTENANCE OF RECORD DOCUMENTS

A. Maintenance of Record Documents: Store record documents in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

PART 2 - PRODUCTS

PART 3 - EXECUTION

END OF SECTION

Section 02 4119 Selective Structure Demolition

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Demolition and removal of selected portions of building or structure.
2. Demolition and removal of selected site elements.
3. Salvage of existing items to be reused or recycled.
4. Removal of masonry wall at basement level to allow for duct passage - wall to be removed from FF to underside of Steel Beam

B. Related Sections:
1. Division 01 Section "Summary" for use of premises and work under separate contracts.
2. Division 01 Section "Existing Paint Containing Lead" for requirements for removing paint containing lead.
3. Division 01 Section "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for selective demolition operations.

1.2 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Detach items from existing construction and deliver them to Owner ready for reuse.

C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.3 SUBMITTALS

A. Make Submittals in accordance with Division 1 Section “Submittal Procedures.”

B. Qualification Data: For demolition firm, professional engineer, and refrigerant recovery technician.

C. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.

D. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.4 QUALITY ASSURANCE

A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

B. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

D. Standards: Comply with ANSI A10.6 and NFPA 241.

1.5 PROJECT CONDITIONS

A. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

B. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

C. Hazardous Materials: Hazardous materials are present in construction to be selectively demolished. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.
1. Hazardous material remediation is specified elsewhere in the Contract Documents.
2. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.

D. Storage or sale of removed items or materials on-site is not permitted.

E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
1. Maintain fire-protection facilities in service during selective demolition operations.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

E. Engage a professional engineer to survey condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective demolition operations.

F. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.

B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
   1. Arrange to shut off indicated utilities with utility companies.
   2. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
   3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
      a. Where entire wall is to be removed, existing services/systems may be removed with removal of the wall.

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
   1. Comply with requirements for access and protection specified in Division 01 Section "Temporary Facilities and Controls."

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
   1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
   2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
   3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
   4. Cover and protect furniture, furnishings, and equipment that have not been removed.
   5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Division 01 Section "Temporary Facilities and Controls."

C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
   1. Strengthen or add new supports when required during progress of selective demolition.

3.4 SELECTIVE DEMOLITION, GENERAL

A. Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
   1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
   2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
   3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
   4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
   5. Maintain adequate ventilation when using cutting torches.
   6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
   7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
   8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
   9. Dispose of demolished items and materials promptly.

B. Removed and Salvaged Items:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until delivery to Owner.
   4. Transport items to Owner's storage area designated by Owner.
   5. Protect items from damage during transport and storage.

C. Removed and Reinstalled Items:
   1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
   2. Pack or crate items after cleaning and repairing. Identify contents of containers.
   3. Protect items from damage during transport and storage.
   4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals, using power-driven saw, then remove concrete between saw cuts.

B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.

C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.

D. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI-WP and its Addendum.
   1. Remove residual adhesive and prepare substrate for new floor coverings by one of the methods recommended by RFCI.

E. Roofing: Existing roofing will be removed under a separate contract.

F. Air-Conditioning Equipment: Remove equipment without releasing refrigerants.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
   1. Do not allow demolished materials to accumulate on-site.
   2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
   3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.7 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION

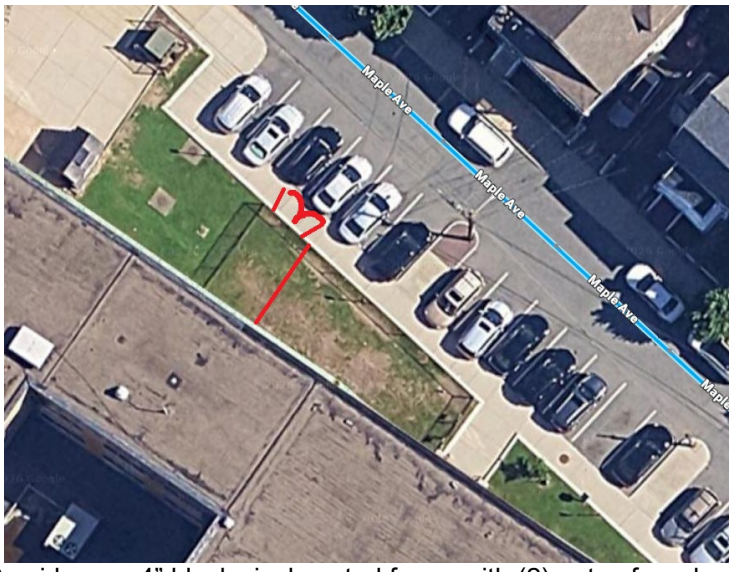
Section 02 8220 – Chain Link Fences and Gates

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Chain link fences and gates at ground mounted mechanical units –
   a. Provide 6’ tall fencing at 3 sides of each of 2 mechanical units – 6” off face of brick, minimum of 3’-0” clear or manufacturers recommended clearance, whichever is greater. Provide each enclosure with double swinging gate.
   b. Provide fencing at 1 side of mechanical unit at north – within existing fence system – fence shall match the adjacent is height and color – provide new double swing gate cut into existing fencing to access unit off sidewalk. GC shall verify the extent of the adjacent underground full tank to ensure that the fence area and unit location is fully outside the ZOI.



   c. Provide new 4” black vinyl coated fence with (2) gates for relocated play are as per the sketch below – size 75’-0” x 35’-0”.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM)
   1. ASTM A 392 - Zinc-Coated Steel Chain-Link Fence Fabric
   2. ASTM C 94 - Ready-Mixed Concrete

B. Chain Link Fence Manufacturers Institute (CLFMI) latest edition Product Manual

1.3 SUBMITTALS

A. Product Data

B. Shop Drawings: Submit scaled drawings showing units, fencing and gate locations as well as interfaces with building and clearances.

1.4 QUALITY ASSURANCE

A. Chain link fabric, posts, and components, and installation shall conform to the requirements of the CLFMI Product Manual unless otherwise shown or specified.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this Section with minimum 3 years documented experience.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Steel Posts: Type I or II or roll formed "C" Section steel conforming to CLFMI and as specified hereinafter.

B. Fabric: No. 9 gage (0.148 nominal) galvanized steel wire in 2 inch mesh; ASTM A 392, top and bottom selvages twisted and barbed, height as shown. Furnish 1-piece fabric widths.

C. End, Corner, and Pull Posts: Minimum sizes and weights as follows:
1. Up to 13 Foot Fabric Height: Type I or II in accordance with CLFMI Product Manual.
2. 13 foot and over Fabric Height (If required):
   a. Type I Posts: Round; 4.0 inch outside diameter pipe, 9.10 lbs/lin ft.
   b. Type II Posts: 4.0 inch outside diameter pipe, 6.56 lbs/lin ft.

D. Line (Intermediate) Posts: Minimum sizes and weights as follows:
1. Up to 8 Foot Fabric Height: Type I, II, or "C" Section in accordance with CLFMI Product Manual.
2. Over 8 Foot Fabric Height:
   a. Type I Posts:
      1) Round: 2.875 inch outside diameter pipe, 5.79 lbs/lin ft.
      2) Square: 2.5" x 2.5" outside dimension, 5.10 lbs/lin ft.
   b. Type II Posts: 2.875 inch outside diameter pipe, 4.64 lbs/lin ft.

E. Gate Posts: Type I or II in accordance with CLFMI Product Manual.

F. Top, Bottom, and Intermediate Rails: Type I or II in accordance with CLFMI Product Manual.
1. Manufacturer's longest lengths.
2. Couplings: Expansion type, approximately 6 inches long.
3. Attaching Devices: Means of attaching top rail securely to each gate, corner, pull, and end post.

G. Sleeves: Galvanized steel pipe not less than 6-inches long with inside diameter not less than ½ inch greater than outside diameter of pipe. Provide steel plate closure welded to bottom of sleeve of width and length not less than 1 inch greater than outside diameter of sleeve.

H. Tension Wire: 7 gage galvanized steel conforming to CLFMI, Marcelled, located at bottom of fabric.

I. Wire Ties: Class 1 galvanized steel, no less than 9 gage.

J. Post Brace Assembly: Manufacturer's standard adjustable brace at end of gate posts and at both sides of corner and pull posts, with horizontal brace located at mid-height of fabric. Use same material as top rail for brace, and truss to line posts with 0.375-inch diameter rod and adjustable tightener.

K. Post Tops: Galvanized steel, weather tight closure cap for each tubular post. Furnish caps with openings to permit passage of top rail.

L. Stretcher Bars: Galvanized steel, 1 piece lengths equal to full height of fabric, with minimum cross-section of 3/16-inch x 3/4-inch. Provide one stretch bar for each gate and end post, and two for each corner and pull post.

M. Stretch Bar Bands: Manufacturer's standard

N. Gate Cross-bracing: 3/8-inch diameter galvanized steel adjustable length truss rods.

O. Ready Mix Concrete: ASTM C94, mix design as follows:
1. Design mix to produce normal weight concrete consisting of Portland cement, aggregate, water-reducing admixture, air-entraining admixture, and water to produce following:
   a. Compressive Strength: 3,500 psi, minimum at 28 days, unless otherwise indicated on Construction Documents.
   b. Slump Range: 1 to 3 inches at time of placement
   c. Air Entrainment: 5 to 8 percent

P. Swinging Gate Hardware:
1. Hinges: Size and material to suit gate size, non-lift-off type, offset to permit full 180-degree gate opening. Provide a pair of 1 1/2-inch hinges for each leaf over 6'-0" nominal height.
2. Latch: Forked type or plunger-bar type to permit operation from either side of gate, with padlock eye as integral part of latch.

Q. Double Gates Hardware: Provide gate stops for double gates, consisting of mushroom type of flush plate with anchors set in concrete, to engage center drop rod or plunger bar. Include locking device and padlock eye as integral part of latch, using 1 padlock for locking both gate leaves.

2.2 GATE FABRICATION

A. Fabricate swing gate perimeter frames of 1.90-inch OD pipe, galvanized steel. Provide horizontal and vertical members to ensure proper gate operation and attachment of fabric, hardware, and accessories. Space frame members maximum of 8'-0" apart.

B. Assemble gate frames by welding or special fittings and rivets, for rigid connections. Install same fabric as for fence with stretcher bars at vertical edges. Install diagonal cross-bracing on gates as required ensuring rigid frame without sag or twist. Bars may be used at top and bottom edges. Attach stretchers to gate frame at 15 inches o.c. maximum.

C. Attach hardware to provide security against removal or breakage.

2.3 FINISH

A. Fabric, Framing, and Other Iron Parts: Hot dip zinc coated in accordance with CLFMI Product Manual.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install chain link fence in accordance with CLFMI Product Manual unless otherwise specified herein.

B. Comply with recommended procedures and instructions of fencing manufacturer. Provide secure, aligned installation with line posts spaced at 10'-0" o.c. maximum.

C. Methods for Setting Posts:
   1. Grade-Set Posts:
      a. Drill or hand excavate to a depth approximately 3 inches lower than post bottom. Set post bottom not less than 36 inches below finish grade.
      b. Excavate each post hole to 12 inch diameter, or not less than four times diameter of post.
      c. Place concrete around posts and vibrate or tamp for consolidation. Check each post for vertical and top alignment, and hold in position during placement and finishing operations. Extend concrete footing 2-inches above grade and trowel crown to shed water.
      d. Post shall be set plumb within 1/4" in 10 feet.
   2. Sleeve Set Posts: Anchor posts by means of pipe sleeves preset and anchored into concrete. After posts have been inserted into sleeves, fill annular space between post and sleeve solid with nonshrink, non-metallic grout, mixed and placed to comply with grout manufacturer's directions.

D. Top Rails: Run rail continuously, bending to form radius for curved runs. Provide expansion couplings as recommended by manufacturer.

E. Center Rails: Provide center rails where indicated. Install in 1 piece between posts and flush with post on fabric side, using special offset fittings where necessary.

F. Brace Assemblies: Install braces so posts are plumb when diagonal rod are under proper tension.

G. Tension Wire: Install tension wires through post cap loops before stretching fabric and tie to each post cap with not less than 6 gauge galvanized wire. Fasten fabric to tension wire using 11 gauge galvanized steel hog rings spaced 24-inches o.c.

H. Fabric: Leave approximately 2 inches between finish grade and bottom selvage. Pull fabric taut and tie to posts, rails, and tension wires. Install fabric on security side of fence, and anchor to framework so that fabric remains in tension after pulling force is released.

I. Stretcher Bars: Secure at end, corner, pull, and gate posts by threading through or clamping to fabric at 4 inches o.c. and secure to posts with metal bands spaced at 15 inches o.c.

J. Tie Wires:
   1. Use U-shaped wire, conforming to diameter of pipe to which attached, clasping pipe and fabric firmly when ends twisted at least 2 full turns. Bend ends of wire to minimize hazard to persons or clothing.
   2. Tie fabric to line posts with wire ties spaced 12 inches o.c. Tie fabric to rails and braces with wire ties spaced 24 inches o.c. Tie fabric to tension wires with hog rings spaced 24-inches o.c.
   3. Manufacturer's standard procedure will be accepted if of equal strength and durability.

K. Fasteners: Install nuts for tension bands and hardware bolts on side of fence opposite fabric side. Peen ends of bolts or score threads to prevent removal of nuts.

L. Gates: Install gates plumb, level, and secure for full opening without interference. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubrication.

3.2 ADDITIONAL INSTALLATION PROVISIONS

A. Use U-shape tie wires, conforming to the diameters of pipe, that clasp the pipe and fabric firmly with ends twisted at least 2 full turns.

B. Bend ends of exposed wires to minimize hazards to persons or clothing.

C. Install nuts for fasteners on tension bands and hardware bolts on the side of the fence opposite the fabric. The ends of bolts, once secure and checked for smooth operation, shall be peened to prevent removal of nuts.

D. Repair coatings damaged in the field with methods and techniques as recommended by the manufacturer.

END OF SECTION

Section 06 1000 Rough Carpentry

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Wood blocking and nailers.
   2. Wood furring.

1.3 DEFINITION

A. Lumber grading agencies, and the abbreviations used to reference them, include the following:
   1. NeLMA: Northeastern Lumber Manufacturers' Association.
   2. NHLA: National Hardwood Lumber Association.
   3. NLGA: National Lumber Grades Authority.
   4. SPIB: The Southern Pine Inspection Bureau.

1.4 ACTION SUBMITTALS

A. Make Submittals in accordance with Section 01 3300 “Submittal Procedures.”

B. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
   1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
   2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
   3. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

1.5 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For the following, from ICC-ES:
   1. Preservative-treated wood.
   2. Power-driven fasteners.
   3. Powder-actuated fasteners.
   4. Expansion anchors.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
   1. Factory mark each piece of lumber with grade stamp of grading agency.
   2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
   3. Provide dressed lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2.
   1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

D. Application: Treat items indicated on Drawings, and the following:
   1. Wood blocking, furring, and similar concealed members in contact with masonry or concrete.
   2. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
   3. Wood framing members that are less than 18 inches above the ground in crawl spaces or unexcavated areas.
   4. Wood floor plates that are installed over concrete slabs-on-grade.

2.3 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
   1. Blocking.
   2. Nailers.
   3. Furring.

B. For items of dimension lumber size, provide Construction or No. 2 grade lumber of any of the following species:
   1. Hem-fir (north); NLGA.
   2. Mixed southern pine; SPIB.
   3. Spruce-pine-fir; NLGA.

C. For furring strips for installing wood-composite (Homasote) paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.4 FASTENERS

A. Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
   1. Where carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, and similar supports to comply with requirements for attaching other construction.

B. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.

C. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

D. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

E. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
   1. NES NER-272 for power-driven fasteners.
   2. "Appendix C, Recommended Fastening Schedule" of the Massachusetts State Building Code.

F. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

3.2 WOOD BLOCKING AND NAILER INSTALLATION

A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
   1. Provide wood blocking and nailers in walls and partitions for attaching equipment, cabinets, and other work, regardless of whether the item to be attached is provided under the Work of this Contract or is provided by Owner.

B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

3.3 WOOD FURRING INSTALLATION

A. Install level and plumb with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.

B. Furring to Receive Wood-Composite (Homasote) Paneling: Install 1-by-3-inch nominal-size furring horizontally and vertically at 24 inches o.c.

END OF SECTION

Section 07 9200 Joint Sealants

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Silicone joint sealants.
   2. Mildew-resistant joint sealants.
   3. Latex joint sealants.

1.3 ACTION SUBMITTALS

A. Make Submittals in accordance with Section 01 3300 “Submittal Procedures.”

B. Product Data: For each joint-sealant product.

1.4 FIELD CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:
   1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
   2. When joint substrates are wet.
   3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
   4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.5 WARRANTY

A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
   1. Warranty Period: Two years from date of Substantial Completion.

B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
   1. Warranty Period: Five years from date of Substantial Completion.

C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:

1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
2. Disintegration of joint substrates from causes exceeding design specifications.
3. Mechanical damage caused by individuals, tools, or other outside agents.
4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. VOC Content of Interior Sealants: Sealants and sealant primers used inside the weatherproofing system shall comply with the following:
1. Architectural sealants shall have a VOC content of 250 g/L or less.
2. Sealants and sealant primers for nonporous substrates shall have a VOC content of 250 g/L or less.
3. Sealants and sealant primers for nonporous substrates shall have a VOC content of 775 g/L or less.

2.2 SILICONE JOINT SEALANTS

A. Silicone, S, NS, 25, NT: Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following or equal:
   a. Dow Corning Corporation; 758.
   b. GE Construction Sealants; SCS2350.
   c. Polymeric Systems, Inc.; PSI-631 or PSI-641.
   d. Schnee-Morehead, Inc., an ITW company; SM5731 Poly-Glaze Plus.

2.3 MILDEW-RESISTANT JOINT SEALANTS

A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.

B. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following or equal:
   a. Dow Corning Corporation; 786-M White.
   b. GE Construction Sealants; SCS1700 Sanitary.
   c. May National Associates, Inc., a subsidiary of Sika Corporation U.S.; Bondaflex Sil 100 WF.
   d. Soudal USA; RTV GP.
   e. Tremco Incorporated; Tremsil 200.

2.4 LATEX JOINT SEALANTS

A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following or equal:
a. BASF Construction Chemicals, LLC, Building Systems; Sonolac.
b. May National Associates, Inc., a subsidiary of Sika Corporation U.S.; Bondaflex 600.
c. Pecora Corporation; AC-20.
d. Tremco Incorporated; Tremflex 834.

2.5 JOINT-SEALANT BACKING

A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.6 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
   1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
   2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
      a. Concrete.
      b. Masonry.
   3. Remove laitance and form-release agents from concrete.
   4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
      a. Metal.
      b. Glass.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
   1. Do not leave gaps between ends of sealant backings.
   2. Do not stretch, twist, puncture, or tear sealant backings.
   3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C 1193.

3.4 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.6 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.
1. Joint Locations:
   a. Joints in exterior cement plaster (stucco).
   b. Perimeter joints between materials listed above and frames of doors, windows, and louvers.
   c. Control and expansion joints in cement plaster (stucco).
   d. Other joints as indicated on Drawings.
2. Joint Sealant: Silicone, S, NS, 25, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

B. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces not subject to significant movement.
1. Joint Locations:
   a. Control joints on exposed interior surfaces of exterior walls.
   b. Perimeter joints between interior wall surfaces and frames of interior doors.
   c. Gaps between wood standing and running trim (i.e. window casings, door casings, baseboard, chair rails, crown moldings) and gypsum board surfaces.
   d. Other joints as indicated on Drawings.
2. Joint Sealant: Acrylic latex.

C. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.
   1. Joint Locations:
      a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
      b. Other joints as indicated on Drawings.
   2. Joint Sealant: Silicone, mildew resistant, acid curing, S, NS, 25, NT.
   3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION

SECTION 26 0000.FSB
ELECTRICAL WORK
(Filed Sub-Bid)

1.01 DESCRIPTION

A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections with DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications.

B. Time, Manner, and Requirements for Submitting Trade-Bids:

1. Trade Contractor Bids for work under this Section shall be for the complete work and shall be filed in a sealed envelope with the Awarding Authority at a time and place as stipulated in the "NOTICE TO CONTRACTORS".

   The following shall appear on the upper left hand corner of the envelope.

   NAME OF TRADE CONTRACT BIDDER: _____
   TRADE CONTRACTOR BID FOR SECTION: _____

2. Every Trade Contractor bidder must be certified by the Division of Capital Asset Management for the dollar amount of their bid. Trade bids will be valid only when accompanied by a Certificate of Eligibility and an Update Statement.
3. Each Trade Contractor bid submitted for work under this Section shall be on forms furnished by the Awarding Authority as required by Section 44F of Chapter 149 of the General Laws, as amended. Sub-bid forms are attached to this document.
4. Trade bids filed with the Awarding Authority shall be accompanied by a BID BOND or CASH or CERTIFIED CHECK or a TREASURER'S or CASHIER'S CHECK issued by a responsible bank or trust company payable to the Town of Hopkinton in the amount of 5 percent of the bid. A Trade Contractor bid accompanied by any other form of bid deposit than those specified will be rejected.

C. Carefully examine all the Contract Documents for requirements which affect the work of this Section. The exact scope of this Section cannot be determined without a thorough review of all specification sections and other Contract Documents.

D. Where referred to, Standard Specifications, Recommendations of Technical Societies, and/or Manufacturer's Associations, plus Codes of Federal, State, and Local Agencies shall include all amendments current as of date of issue of these specifications.

E. Sub-Sub-Bid Requirements:

1. Sub-sub bids are required for this Section. Sub-Bidders shall include the appropriate information for the list of sub sub-bid Class of Work noted below in this paragraph.

   NONE

2. If the Filed Sub-Bidder customarily performs the above Work with its own workforce, the Sub-Bidder should list its own name and trade and leave the dollar amount blank.

3. If the Filed Sub-Bidder does not customarily perform the Classes of Work with its own workforce, the Sub-Bidder should list the name of the contractor performing the work, the trade and insert a dollar amount.

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1.1 GENERAL REQUIREMENTS

A. Sub-bids shall be submitted in accordance with the provisions of Mass General Laws (Ter. Ed.) Chapter 149, Sections 44A-44I, inclusive as amended. The time and place of submission of sub-bids shall be as set forth in the INSTRUCTIONS TO BIDDERS

B. Each sub-bid filed with the Awarding Authority must e accompanied by BID BOND, or CASH or CERTIFIED CHECK or a TREASURER'S CHECK or CASHIERS'S CHECK issued by a responsible bank or trust company, payable to the Town of Hopkinton in the amount of five percent (5%) of the bid amount. A sub-bid accompanied by any other form of bid deposit will be rejected.

C. Each sub-bid, submitted for the work of this Section, shall be on a form furnished by the Awarding Authority, as required by Section 44F of Chapter 149, as amended.

D. Reference Drawings: Refer to the List of Drawings bound in the front of this specification.

E. The following specifications sections shall be part of this file sub-bid section:

DIVISION 26 – ELECTRICAL
Section 26 0000 Electrical FSB

DIVISION 27 – COMMUNICATIONS
N/A

DIVISION 28 – ELECTRONIC SAFETY AND SECURITY
N/A

F. The Work of this Section is shown on drawings:

E-001	Electrical Legend
E-002	Electrical Specifications
E-003	Electrical Specifications & Notes
E-100	Electrical Basement Demolition Plan
E-200	Electrical Basement Power Plan
E-201	Electrical First Floor Power Plan
E-400	Electrical Riser Diagram & Schedules
E-500	Electrical Details

G. The Trade contractor's attention is directed to the General Conditions. This Trade contractor shall be responsible for obtaining and paying for all permits and inspections required to complete all Work described in this section.

PART 2 MATERIALS

A. Refer to specification sections referenced in 1.11 above for specific material requirements for work of this section.

PART 3 EXECUTION

A. Refer to specification sections referenced in 1.11 above for specific execution requirements for work of this section.

END OF SECTION

SECTION 26 0000.FSB
ELECTRICAL WORK
(Filed Sub-Bid)

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   NAME OF TRADE CONTRACT BIDDER: _____
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3. Each Trade Contractor bid submitted for work under this Section shall be on forms furnished by the Awarding Authority as required by Section 44F of Chapter 149 of the General Laws, as amended. Sub-bid forms are attached to this document.
4. Trade bids filed with the Awarding Authority shall be accompanied by a BID BOND or CASH or CERTIFIED CHECK or a TREASURER'S or CASHIER'S CHECK issued by a responsible bank or trust company payable to the Town of Hopkinton in the amount of 5 percent of the bid. A Trade Contractor bid accompanied by any other form of bid deposit than those specified will be rejected.

C. Carefully examine all the Contract Documents for requirements which affect the work of this Section. The exact scope of this Section cannot be determined without a thorough review of all specification sections and other Contract Documents.

D. Where referred to, Standard Specifications, Recommendations of Technical Societies, and/or Manufacturer's Associations, plus Codes of Federal, State, and Local Agencies shall include all amendments current as of date of issue of these specifications.

E. Sub-Sub-Bid Requirements:

1. Sub-sub bids are required for this Section. Sub-Bidders shall include the appropriate information for the list of sub sub-bid Class of Work noted below in this paragraph.

   NONE

2. If the Filed Sub-Bidder customarily performs the above Work with its own workforce, the Sub-Bidder should list its own name and trade and leave the dollar amount blank.

3. If the Filed Sub-Bidder does not customarily perform the Classes of Work with its own workforce, the Sub-Bidder should list the name of the contractor performing the work, the trade and insert a dollar amount.

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C. Each sub-bid, submitted for the work of this Section, shall be on a form furnished by the Awarding Authority, as required by Section 44F of Chapter 149, as amended.

D. Reference Drawings: Refer to the List of Drawings bound in the front of this specification.

E. The following specifications sections shall be part of this file sub-bid section:

DIVISION 26 – ELECTRICAL
Section 26 0000 Electrical FSB

DIVISION 27 – COMMUNICATIONS
N/A

DIVISION 28 – ELECTRONIC SAFETY AND SECURITY
N/A

F. The Work of this Section is shown on drawings:

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G. The Trade contractor's attention is directed to the General Conditions. This Trade contractor shall be responsible for obtaining and paying for all permits and inspections required to complete all Work described in this section.

PART 2 MATERIALS

A. Refer to specification sections referenced in 1.11 above for specific material requirements for work of this section.

PART 3 EXECUTION

A. Refer to specification sections referenced in 1.11 above for specific execution requirements for work of this section.

END OF SECTION

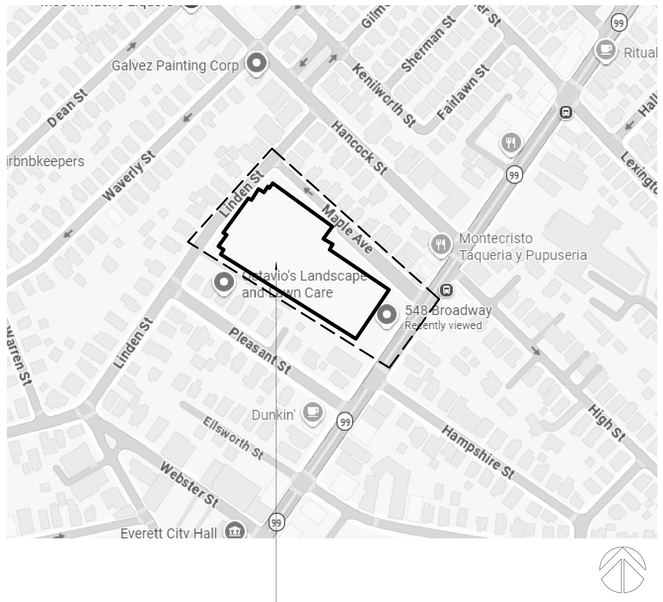
548 BROADWAY MECHANICAL REPAIRS

Mechanical Repairs

548 BROADWAY, EVERETT, MA, 02149

Owner:	Owners Project Manager:	MEP/FP:	Hazardous Materials:
CITY OF EVERETT	**LEFTFIELD PROJECT MANAGEMENT**	**CMTA, INC.**	**UNIVERSAL ENGINEERING CONSULTING**
484 BROADWAY EVERETT, MA, 02149	22 FRANKLIN STREET BOSTON, MA, 02110	161 WORCESTER ROAD, SUITE 305 FRAMINGHAM, MA, 01701	12 BREWSTER ROAD FRAMINGHAM, MA, 01702

LOCATION PLAN



OLD EVERETT HIGH SCHOOL
548 BROADWAY, EVERETT, MA

DRAWING SCHEDULE

SHEET #	DRAWING TITLE
FP-001	FIRE PROTECTION LEGEND
FP-002	FIRE PROTECTION SPECIFICATIONS
FP-100	FIRE PROTECTION BASEMENT NEW WORK PLAN
P-001	PLUMBING LEGEND
P-002	PLUMBING LEGEND
P-100	PLUMBING SPECIFICATIONS
M-001	MECHANICAL LEGEND
M-002	MECHANICAL SPECIFICATIONS
M-100	MECHANICAL BASEMENT DEMOLITION PLAN
M-200	MECHANICAL BASEMENT NEW WORK PLAN
M-201	MECHANICAL FIRST FLOOR NEW WORK PLAN
M-202	MECHANICAL SECOND FLOOR NEW WORK PLAN
M-203	MECHANICAL THIRD FLOOR NEW WORK PLAN
M-204	MECHANICAL ATTIC NEW WORK PLAN
M-300	MECHANICAL DETAILS
M-301	MECHANICAL DETAILS
M-400	MECHANICAL SCHEDULES
E-001	ELECTRICAL LEGEND
E-002	ELECTRICAL SPECIFICATIONS
E-003	ELECTRICAL SPECIFICATIONS & NOTES
E-100	ELECTRICAL BASEMENT DEMOLITION PLAN
E-200	ELECTRICAL BASEMENT POWER PLAN
E-201	ELECTRICAL FIRST FLOOR POWER PLAN
E-400	ELECTRICAL RISER DIAGRAM & SCHEDULES
E-500	ELECTRICAL DETAILS

CODE INFORMATION

2021 INTERNATIONAL BUILDING CODE WITH MASSACHUSETTS AMENDMENTS

PROJECT LOCATION	548 BROADWAY, EVERETT, MA
JURISDICTION LOCAL AUTHORITY	CITY OF EVERETT, MA
BASIC BUILDING CHARACTERISTICS	TYPE I-B AND II-B CONSTRUCTION. NONSEPARATED MIXED USE, E: EDUCATION, A-1; AUDITORIUM, A-3/A-4; GYMNASIUM, B; OFFICES, AND S-1; STORAGE 3 STORIES FULLY SPRINKLERED
PROJECT DESCRIPTION	MECHANICAL REPAIRS

APPLICABLE CODES

780 CMR: MASSACHUSETTS STATE BUILDING CODE, 10TH EDITION (2021 INTERNATIONAL BUILDING CODE WITH MASSACHUSETTS AMENDMENTS)
780 CMR: MASSACHUSETTS STATE BUILDING CODE, 10TH EDITION (2021 INTERNATIONAL EXISTING BUILDING CODE WITH MASSACHUSETTS AMENDMENTS)
248 CMR: MASSACHUSETTS PLUMBING CODE (2023 MASSACHUSETTS UNIFORM STATE PLUMBING CODE PLUMBING CODE)
2021 INTERNATIONAL MECHANICAL CODE WITH MASSACHUSETTS AMENDMENTS
2021 INTERNATIONAL ENERGY CONSERVATION CODE & MASSACHUSETTS 2025 STRETCH ENERGY CODE

COMPLIANCE PATH PER INTERNATIONAL EXISTING BUILDING CODE

COMPLIANCE PATH PER CHAPTER 3 SECTION 301.3.2: WORK AREA COMPLIANCE METHOD

CLASSIFICATION OF WORK PER CHAPTER 6: ALTERATION LEVEL 1 PER SECTION 602

ALTERATION LEVEL 1 PER CHAPTER 7 COMPLIANCE:

SECTION 701.7 NEW WORK SHALL COMPLY WITH THE MATERIALS AND METHODS REQUIREMENTS IN THE **INTERNATIONAL BUILDING CODE, INTERNATIONAL ENERGY CONSERVATION CODE, INTERNATIONAL MECHANICAL CODE AND INTERNATIONAL PLUMBING CODE.**

EXCEPTION 1. ROOF REPLACEMENT OR ROOF RECOVER OF EXISTING LOW-SLOPE ROOF COVERINGS SHALL NOT BE REQUIRED TO MEET THE MINIMUM DEIGN SLOPE REQUIREMENTS OF 1/4" UNITS VERTICAL IN 12 UNITS HORIZONTAL IN SECTION 1507 OF THE **IBC** FOR ROOFS THAT PROVIDE POSITIVE ROOF DRAINAGE.

EXCEPTION 2. RECOVERING OR REPLACING AN EXISTING ROOF COVERING SHALL NOT BE REQUIRED TO MEET THE REQUIREMENT FOR SECONDARY (EMERGENCY OVERFLOW) DRAINS OR SCUPPERS IN SECTION 1502 OF THE **IBC** FOR ROOFS THAT PROVIDE POSITIVE ROOF DRAINAGE.

SECTION 708 ENERGY CONSERVATION. LEVEL 1 ALTERATIONS TO EXISTING BUILDINGS OR STRUCTURES DO NOT REQUIRE THE ENTIRE BUILDING OR STRUCTURE TO COMPLY WITH THE ENERGY REQUIREMENTS OF THE INTERNATIONAL ENERGY CODE. THE ALTERATION SHALL CONFORM TO THE ENERGY REQUIREMENTS OF THE INTERNATIONAL ENERGY CONSERVATION CODE OR INTERNATIONAL RESIDENTIAL CODE AS THEY RELATE TO THE NEW CONSTRUCTION ONLY.

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PROJECT No. 0109630
09/22/26

FIRE PROTECTION PHASING NOTES

1. THIS PROJECT INTERFACES EXTENSIVELY WITH EXISTING BUILDING SERVICES. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE AND PHASE ALL TIE-INS AND INTERRUPTIONS OF EXISTING SERVICES TO MINIMIZE OR ELIMINATE DOWNTIME. AS AN EXAMPLE, MAIN GAS SERVICE, WATER SERVICE, ELECTRICAL SERVICE, HVAC SERVICES, STEAM GENERATION, ETC., WILL BE AFFECTED AND REPLACED OR MOVED DURING THIS PROJECT. THE CONTRACTOR SHALL INSTALL ALL NEW SERVICES AND EQUIPMENT AND HAVE THEM TESTED AND FULLY AND RELIABLY FUNCTIONAL PRIOR TO INTERRUPTING, RELOCATING OR REMOVING ANY EXISTING SERVICES. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO BARE ANY AND ALL COSTS ASSOCIATED WITH THIS PHASING, INCLUDING TEMPORARY SERVICES, TEMPORARY RELOCATION, PREMIUM TIME WORK, ETC. CONTRACTOR SHALL COORDINATE ALL SAID WORK WITH THE OWNER AND APPLICABLE UTILITIES PER THE CONTRACT DOCUMENTS.

FIRE PROTECTION HAZARDOUS MATERIALS NOTES

1. THE CONTRACTOR IT IS HEREBY ADVISED THAT IS POSSIBLE THAT ASBESTOS AND/OR OTHER HAZARDOUS MATERIALS ARE OR WERE PRESENT IN THIS BUILDING(S). ANY WORKER, OCCUPANT, VISITOR, ETC., WHO ENCOUNTERS ANY MATERIAL OF WHOSE CONTENT THEY ARE NOT CERTAIN SHALL PROMPTLY REPORT THE EXISTENCE AND LOCATION OF THAT MATERIAL TO THE OWNER. FURTHERMORE, THE CONTRACTOR SHALL ENSURE THAT NO ONE COMES NEAR TO OR IN CONTACT WITH ANY SUCH MATERIAL OR FUMES THEREFROM UNTIL ITS CONTENT CAN BE ASCERTAINED TO BE NON-HAZARDOUS.
2. CMTA, INC. HAS NO EXPERTISE IN THE DETERMINATION OF THE PRESENCE OF ANY HAZARDOUS MATERIAL. THEREFORE, NO ATTEMPT HAS BEEN MADE BY CMTA TO IDENTIFY THE EXISTENCE OR LOCATION OF ANY SUCH HAZARDOUS MATERIAL. FURTHERMORE, CMTA NOR ANY AFFILIATE HEREOF WILL NOT OFFER OR MAKE ANY RECOMMENDATIONS RELATIVE TO THE REMOVAL, HANDLING OR DISPOSAL OF SUCH MATERIAL.
3. IF THE WORK WHICH IS TO BE PERFORMED INTERFACES, CONNECTS OR RELATES IN ANY PHYSICAL WAY WITH OR TO EXISTING COMPONENTS WHICH CONTAIN OR BEAR ANY HAZARDOUS MATERIAL, ASBESTOS BEING ONE, THEN IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO CONTACT THE OWNER AND SO ADVISE HIM IMMEDIATELY.
4. THE CONTRACTOR BY EXECUTION OF THE CONTRACT FOR ANY WORK AND/OR BY THE ACCOMPLISHMENT OF ANY WORK THEREBY AGREE TO BRING NO CLAIM RELATIVE TO HAZARDOUS MATERIALS FOR NEGLIGENCE, BREACH OF CONTRACT, INDEMNITY, OR ANY OTHER SUCH ITEM AGAINST CMTA, ITS PRINCIPALS, EMPLOYEES, AGENTS OR CONSULTANTS. ALSO, THE CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD CMTA, ITS PRINCIPALS, EMPLOYEES, AGENTS AND CONSULTANTS HARMLESS FROM ANY SUCH RELATED CLAIMS WHICH MAY BE BROUGHT BY ANY SUBCONTRACTORS, SUPPLIERS OR ANY OTHER THIRD PARTIES.
5. THE CONTRACTOR IS DIRECTED TO THE SPECIFICATIONS FOR FURTHER INFORMATION.

FIRE PROTECTION GENERAL NOTES

1. COORDINATE THE LOCATION OF DRAINS, THERMOSTATS, GAS OUTLETS, ETC., WITH ALL CASEWORK EQUIPMENT, MECHANICAL ROOM EQUIPMENT, ETC., PRIOR TO COMMENCING INSTALLATION. WORK NOT SO COORDINATED SHALL BE REMOVED AND PROPERLY INSTALLED AT THE EXPENSE OF THE CONTRACTOR.
2. THE CONTRACTOR SHALL EXERCISE EXTREME CARE IN THE COURSE OF THEIR WORK SO AS TO ENSURE THAT THEY DO NOT INTERRUPT ANY EXISTING SERVICE. FOR SAFETY PURPOSES, PAY PARTICULAR ATTENTION TO THIS PRECAUTION RELATIVE TO NATURAL GAS AND ELECTRICAL LINES. VERIFY THE LOCATION, SIZE, TYPE, ETC., OF EACH UNDERGROUND OR OVERHEAD UTILITY. ALL WORK SHALL BE PERFORMED IN ACCORD WITH ALL FEDERAL, STATE AND/OR LOCAL RULES, REGULATIONS, STANDARD AND SAFETY REQUIREMENTS. UTILITIES SHALL BE INSTALLED IN ACCORD WITH THE APPLICABLE MUNICIPALITY OR UTILITY COMPANY STANDARDS. IN ALL CASES, THE MOST STRINGENT REQUIREMENT SHALL APPLY.
3. WHERE WORK IS REQUIRED ABOVE EXISTING LAY-IN, PLASTER OR GYPSUM BOARD CEILINGS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL AND REINSTALLATION (OR REPLACEMENT, IF DAMAGED) OF ALL CEILING OR TILE AND GRID MEMBERS NECESSARY TO PERFORM HIS WORK. NEW TILE AND GRID SHALL MATCH THE SURROUNDING AREAS. ALL PATCHING WORK SHALL MATCH ADJACENT SURFACES.
4. ALL NEW WORK SHALL BE HUNG FROM STRUCTURE, NOT FROM THE WORK OF OTHER TRADES, WHETHER EXISTING OR NEW.
5. COORDINATE ALL WORK WITH PROJECT PHASING REQUIREMENTS.
6. PATCH, REPAIR AND PAINT OR PROVIDE WALL COVERING FOR (TO OWNER'S STANDARDS) EXISTING WALLS, CEILINGS, ETC., THAT ARE TO REMAIN IF DAMAGED DURING CONSTRUCTION. REPAIRS SHALL MATCH ADJACENT SURFACES TO THE SATISFACTION OF THE ARCHITECT AND OWNER.
7. OBSERVE ALL APPLICABLE CODES, RULES AND REGULATIONS THAT MAY APPLY TO THE WORK UNDER THIS CONTRACT. (CITY, COUNTY, LOCAL, FEDERAL, MUNICIPALITY, UTILITY COMPANY, COMMONWEALTH OF MASSACHUSETTS, ETC.).
8. CONTRACTOR SHALL BE AWARE OF UNSEEN FIRE PROTECTION WORK DURING DEMOLITION. IF ITEMS ARE UNCOVERED DURING DEMOLITION THEN FIELD VERIFY THE USE OF THE ITEMS AND PLAN AN ALTERNATE ROUTE TO RUN THESE ITEMS. THEN CONTACT THE ENGINEERS TO REVIEW THE ROUTING.
9. IF AREA OF CONSTRUCTION HAS A POST TENSION FLOOR SLAB. CONTRACTOR SHALL USE ULTRA SOUND OR OTHER APPROVED METHODS TO SURVEY THE EXISTING FLOOR STRUCTURE BEFORE MAKING ANY AND ALL FLOOR PENETRATIONS.
10. WHERE FIRE PROOFING IS SPRAYED ON EXISTING STRUCTURE ALL EXISTING CONDUITS, WATER, HYDRONIC, STEAM, CHILLED WATER, FIRE PROTECTION LINES, MED GAS, ETC. SHALL BE LOWERED TO BE BELOW FULL THICKNESS OF FIRE PROOFING WITH NO INTERFERENCE.
11. ALL PENETRATIONS OF FIRE AND SMOKE RATED ASSEMBLIES SHALL BE APPROPRIATELY FIRE STOPPED PER AN APPROVED U.L. LISTED STANDARD. CONTRACTOR SHALL PAY PARTICULAR ATTENTION TO INSULATED PIPING PENETRATIONS.
12. ALL WORK REQUIRING DOWNTIME OF ANY AREA IN THE BUILDING SHALL BE SCHEDULED 2 WEEKS IN ADVANCE, AND SHALL COMPLY WITH INTERIM LIFE SAFETY MEASURES.
13. ALL PIPING IN ROOMS WITH CEILINGS SHALL BE ABOVE CEILING EXCEPT AS NOTED.
14. NO WORK SHALL BE INSTALLED IN VIOLATION OF ANY GOVERNING CODES. ANY WORK SHOWN ON THE DRAWINGS WHICH IS IN VIOLATION OF SUCH CODES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE AND SHALL BE RESOLVED PRIOR TO THE INSTALLATION OF THE WORK.
15. LOCATIONS OF PIPING AND EQUIPMENT ARE APPROXIMATE AND SUBJECT TO MINOR ADJUSTMENTS IN THE FIELD. DO NOT SCALE THE DRAWINGS.
16. ALL OFFSETS IN PIPING ARE NOT NECESSARILY SHOWN. PROVIDE ADDITIONAL OFFSETS WHERE NECESSARY.
17. THE CONTRACTOR IS RESPONSIBLE FOR ALL UTILITY COMPANY FEES OR OTHER COSTS THAT ANY UTILITY COMPANY MAY REQUIRE TO COMPLETE THEIR WORK. (GAS, SEWER, WATER, ETC.).
18. INSTALL ALL PIPING AND EQUIPMENT IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTION. IF IN CONFLICT WITH THE DESIGN INDICATED IN CONTRACT DOCUMENTS, ADVISE THE ENGINEERS PRIOR TO INSTALLATION FOR CLARIFICATION. PROVIDE RECOMMENDED ACCESS AND SERVICE CLEARANCES FOR ALL EQUIPMENT.
19. SEAL AIRTIGHT AROUND ALL DUCTS AND PIPING PENETRATIONS THROUGH WALLS, FLOORS AND ROOF. PROVIDE FIRE STOPPING IN FIRE PARTITION.
20. THE CONTRACTOR SHALL RELOCATE OR AVOID ANY EXISTING EQUIPMENT APPURTENANCES, ETC., THAT CONFLICT WITH NEW WORK.
21. WHERE MOUNTING HEIGHTS ARE NOT INDICATED OR ARE IN CONFLICT WITH ANY OTHER BUILDING SYSTEM, CONTACT THE ENGINEERS BEFORE INSTALLATION. REFER ALSO TO ARCHITECTURAL WALL INTERIOR AND EXTERIOR WALL ELEVATIONS, CEILING HEIGHTS AND OTHER DETAIL OF THESE DOCUMENTS.
22. ANY VIBRATING, OSCILLATING OR OTHER NOISE OR MOTION PRODUCING EQUIPMENT SHALL BE ISOLATED FROM SURROUNDING SYSTEMS IN AN APPROVED MANNER. NOISY OR STRUCTURALLY DAMAGING INSTALLATIONS SHALL BE SATISFACTORILY REPLACED OR REPAIRED AT THE INSTALLING CONTRACTOR'S EXPENSE. THE FINAL DECISION ON THE SUITABILITY OF A PARTICULAR INSTALLATION'S ACCEPTABILITY SHALL BE THAT OF THE ENGINEER.
23. DEVIATIONS IN SIZE, CAPACITIES, FIT, FINISH, ETC. FOR EQUIPMENT FROM THAT USED AS BASIS OF DESIGN SHALL BE THE RESPONSIBILITY OF THE PURCHASER OF THAT EQUIPMENT. ANY PROVISIONS REQUIRED TO ACCOMMODATE A DEVIATION, WHETHER APPROVED BY THE ENGINEERS OR NOT, SHALL BE THE RESPONSIBILITY OF THE PURCHASER.
24. VALVES REQUIRING ACCESS SHALL NOT BE LOCATED ABOVE A HARD CEILING. IF THIS IS NOT POSSIBLE, THEN AN APPROPRIATELY SIZED ACCESS DOOR SHALL BE PLACED UNDER THE ITEM TO ALLOW EASY MAINTENANCE AND ADJUSTMENT. ADDITIONALLY ALL SUCH ITEMS SHALL NOT BE LOCATED AN UNREASONABLE DISTANCE ABOVE THE CEILINGS. IN GENERAL ALL SUCH ITEMS UNLESS INDICATED OTHERWISE SHALL BE MOUNTED SIX TO TWELVE INCHES ABOVE THE CEILING. IF IN DOUBT, CONTACT ENGINEER PRIOR TO INSTALLING.
25. ALL MANHOLES, VAULTS AND SIMILAR UNDERGROUND STRUCTURES SHALL HAVE THE TOP ELEVATION SET FLUSH WITH FINISHED GRADE UNLESS SPECIFICALLY NOTED OTHERWISE.
26. WHEN RUNNING ANY TYPE OF PIPING BELOW A FOOTER, OR IN THE ZONE OF INFLUENCE THE PIPING SHALL BE BACKFILLED WITH CEMENTITIOUS FLOWABLE FILL PER SPECIFICATIONS. WHENEVER POSSIBLE, LOCATE PIPING OUTSIDE OF THE ZONE OF INFLUENCE. THE ZONE OF INFLUENCE IS THE AREA UNDER THE FOOTER WITHIN A 45 DEGREE ANGLE PROJECTING DOWN FROM THE BOTTOM EDGE OF THE FOOTER OF ALL SIDES OF THE FOOTER. ADDITIONALLY, GREASE TRAPS, MANHOLES, VAULTS AND OTHER UNDERGROUND STRUCTURES SHALL BE HELD AWAY FROM BUILDING WALLS FAR ENOUGH TO BE OUTSIDE OF THE ZONE OF INFLUENCE.
27. WORK IN CONFINED AREAS SHALL BE IN ACCORDANCE WITH THE OWNER'S SAFETY POLICY REQUIREMENTS.

ABBREVIATIONS

ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
ANSI	AMERICAN NATIONAL STANDARD INSTITUTE
CLG	CEILING
CTE	CONNECT TO EXISTING
DN	DOWN
ENGR	ENGINEER
EQ	EQUAL
ETBR	EXISTING TO BE REMOVED
ETR	EXISTING TO REMAIN
FACP	FIRE ALARM CONTROL PANEL
FCVA	FLOOR CONTROL VALVE
FDC	FIRE DEPARTMENT CONNECTION
FDV	FIRE DEPARTMENT VALVE
FDVC	FIRE DEPARTMENT VALVE CABINET
FFE	FINISH FLOOR ELEVATION
FHC	FIRE HOSE CABINET
FL	FLOOR
FLEX	FLEXIBLE CONNECTION
FP	FIRE PUMP
FPC	FIRE PROTECTION CONTRACTOR
FS	FLOW SWITCH
FT	FEET OR FOOT
GA	GAGE/GAUGE
GAL	GALLON (-S)
GC	GENERAL CONTRACTOR
HP	H (-ORSEPOWER, -EAT PUMP)
Hz	HERTZ
IN	INCH (-ES)
KW	KILOWATT
MAX	MAXIMUM
MC	MECHANICAL CONTRACTOR
MIN	MIN (-IMUM, -UTE)
MISC	MISCELLANEOUS
N/A	NOT APPLICABLE
NC	NOIS CRITERIA OR NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OD	OUTSIDE DI (-AMETER, -MENSION)
PC	PLUMBING CONTRACTOR
PH	PHASE [ELECTRICAL]
PRV	PRESSURE REDUCING VALVE (STEAM, WATER, GAS)
PSI	POUNDS PER SQUARE INCH
PSIG	PSI GAUGE
RPM	REVOLUTIONS PER MINUTE
S	SLOPE
SQ.FT	SQUARE FEET OR FOOT
SP	SPRINKLER
SPD	SPRINKLER DRAIN
TEMP	TEMPERATURE
TS	TAMPER SWITCH
TYP	TYPICAL
W/	WITH
W/O	WITHOUT
%	PERCENT
℄	CENTERLINE

ABBREVIATIONS - PIPING SYSTEMS

DRY	SPRINKLER (DRY PIPE)
F	FIRE MAIN / STANDPIPE
FTST	TEST HEADER
PRE	SPRINKLER (PRE ACTION)
SP	SPRINKLER (WET PIPE)
SPD	SPRINKLER DRAIN

GENERAL SYMBOLS

TAGGED NOTE DESIGNATOR	#
REVISION TRIANGLE	A
POINT OF CONNECTION / CONNECT TO EXISTING	
POINT OF DEMOLITION	
ROOM TAG	ROOM NAME 101.0

FIRE PROTECTION PIPING LEGEND

PIPE ELBOW TURNING UP	
PIPE ELBOW TURNING DOWN	
PIPE TEE; CONNECTION ON TOP	
PIPE TEE; CONNECTION ON BOTTOM	
PIPE CAP	
EXISTING PIPING TO BE DEMOLISHED	
EXISTING PIPING	
NEW PIPING	
STRAINER	
GENERIC VALVE	
CHECK VALVE	
REDUCED PRESSURE BACKFLOW PREVENTER	
OS&Y (GATE) VALVE	
PRESSURE REDUCING VALVE (STEAM, GAS, WATER, ETC.)	
FLEXIBLE PIPE CONNECTION	
PIPING UNION	
FLOW SWITCH	
PRESSURE SWTICH	
TAMPER SWITCH	
EXISTING SPRINKLER TO REMAIN	
EXISTING SPRINKLER TO BE REMOVED	
CONCEALED TYPE SPRINKLER HEAD	
PENDENT/SEMI-RECESSED/RECESSED TYPE SPRINKLER HEAD	
UPRIGHT TYPE SPRINKLER HEAD	
SIDEWALL TYPE SPRINKLER HEAD	
EXISTING SIDEWALL SPRINKLER TO REMAIN	
EXISTING SIDEWALL SPRINKLER TO BE REMOVED	
WINDOW TYPE SPRINKLER	
DRY ALARM VALVE	
WET ALARM VALVE	

SPRINKLER DESIGN CRITERIA

NFPA OCCUPANCY CLASSIFICATION - LIGHT HAZARD

AREAS: CORRIDORS, TOILET ROOMS, MEETING ROOMS ALL OTHER AREAS NOT DEFINED

DESIGN DENSITY (GPM/SF)	CALCULATION AREA (SF)	HOSE ALLOWANCE (GPM)	MAX AREA (SF)
.10	1500	100	225

SPRINKLER DESIGN CRITERIA

NFPA OCCUPANCY CLASSIFICATION - ORDINARY HAZARD GROUP 1

AREAS: MECHANICAL ROOMS & ELECTRICAL ROOMS

DESIGN DENSITY (GPM/SF)	CALCULATION AREA (SF)	HOSE ALLOWANCE (GPM)	MAX AREA (SF)
.15	1500	250	130

HYDRANT / FIRE PUMP TEST RESULTS

LOCATION

DATE

DISCHARGE PRESSURE (PSI)	SUCTION PRESSURE (PSI)	FLOW RATE (GPM)	PERCENTAGE
			CHURN
			50%
			100%
			150%

SHEET LIST - FIRE PROTECTION

SHEET #	SHEET NAME
FP-001	FIRE PROTECTION LEGEND
FP-100	FIRE PROTECTION BASEMENT NEW WORK PLAN
FP-002	FIRE PROTECTION SPECIFICATIONS

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PROJECT

OLD EVERETT HIGH SCHOOL - TASK 5

548 Broadway, Everett, MA 02149

CLIENT

CITY OF EVERETT, MA

CONSULANTS

REGISTRATION

Issue Date

KEYPLAN

ISSUE / REVISION

#	Date	Description

NOT FOR CONSTRUCTION

PROJECT NUMBER

BEMS26

SHEET TITLE

FIRE PROTECTION LEGEND

SHEET NUMBER

FP-001

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DIVISION 21: FIRE PROTECTION SPECIFICATIONS

PART 1 - GENERAL

1.01 DESCRIPTION

A. ATTENTION IS DIRECTED TO THE CONTRACT AND GENERAL CONDITIONS AND ALL SECTIONS WITH DIVISION 1 - GENERAL REQUIREMENTS, WHICH ARE HEREBY MADE A PART OF THIS SECTION OF THE SPECIFICATIONS.

B. TIME, MANNER, AND REQUIREMENTS FOR SUBMITTING TRADE-BIDS:

1. TRADE CONTRACTOR BIDS FOR WORK UNDER THIS SECTION SHALL BE FOR THE COMPLETE WORK AND SHALL BE FILED IN A SEALED ENVELOPE WITH THE AWARDING AUTHORITY AT A TIME AND PLACE AS STIPULATED IN THE "NOTICE TO CONTRACTORS".
   THE FOLLOWING SHALL APPEAR ON THE UPPER LEFT HAND CORNER OF THE ENVELOPE.
   NAME OF TRADE CONTRACT BIDDER: _____
   TRADE CONTRACTOR BID FOR SECTION: _____
2. EVERY TRADE CONTRACTOR BIDDER MUST BE CERTIFIED BY THE DIVISION OF CAPITAL ASSET MANAGEMENT FOR THE DOLLAR AMOUNT OF THEIR BID. TRADE BIDS WILL BE VALID ONLY WHEN ACCOMPANIED BY A CERTIFICATE OF ELIGIBILITY AND AN UPDATE STATEMENT.
3. EACH TRADE CONTRACTOR BID SUBMITTED FOR WORK UNDER THIS SECTION SHALL BE ON FORMS FURNISHED BY THE AWARDING AUTHORITY AS REQUIRED BY SECTION 44F OF CHAPTER 149 OF THE GENERAL LAWS, AS AMENDED. SUB-BID FORMS ARE ATTACHED TO THIS DOCUMENT.
4. TRADE BIDS FILED WITH THE AWARDING AUTHORITY SHALL BE ACCOMPANIED BY A BID BOND OR CASH OR CERTIFIED CHECK OR A TREASURER'S OR CASHIER'S CHECK ISSUED BY A RESPONSIBLE BANK OR TRUST COMPANY PAYABLE TO THE TOWN OF EVERETT IN THE AMOUNT OF 5 PERCENT OF THE BID. A TRADE CONTRACTOR BID ACCOMPANIED BY ANY OTHER FORM OF BID DEPOSIT THAN THOSE SPECIFIED WILL BE REJECTED.

C. CAREFULLY EXAMINE ALL THE CONTRACT DOCUMENTS FOR REQUIREMENTS WHICH AFFECT THE WORK OF THIS SECTION. THE EXACT SCOPE OF THIS SECTION CANNOT BE DETERMINED WITHOUT A THOROUGH REVIEW OF ALL SPECIFICATION SECTIONS AND OTHER CONTRACT DOCUMENTS.

D. WHERE REFERRED TO, STANDARD SPECIFICATIONS, RECOMMENDATIONS OF TECHNICAL SOCIETIES, AND/OR MANUFACTURER'S ASSOCIATIONS, PLUS CODES OF FEDERAL, STATE, AND LOCAL AGENCIES SHALL INCLUDE ALL AMENDMENTS CURRENT AS OF DATE OF ISSUE OF THESE SPECIFICATIONS.

E. SUB-SUB-BID REQUIREMENTS:

1. SUB-SUB BIDS ARE REQUIRED FOR THIS SECTION. SUB-BIDDERS SHALL INCLUDE THE APPROPRIATE INFORMATION FOR THE LIST OF SUB SUB-BID CLASS OF WORK NOTED BELOW IN THIS PARAGRAPH.
   NONE
2. IF THE FILED SUB-BIDDER CUSTOMARILY PERFORMS THE ABOVE WORK WITH ITS OWN WORKFORCE, THE SUB-BIDDER SHOULD LIST ITS OWN NAME AND TRADE AND LEAVE THE DOLLAR AMOUNT BLANK.
3. IF THE FILED SUB-BIDDER DOES NOT CUSTOMARILY PERFORM THE CLASSES OF WORK WITH ITS OWN WORKFORCE, THE SUB-BIDDER SHOULD LIST THE NAME OF THE CONTRACTOR PERFORMING THE WORK, THE TRADE AND INSERT A DOLLAR AMOUNT.

1.02 GENERAL REQUIREMENTS

A. SUB-BIDS SHALL BE SUBMITTED IN ACCORDANCE WITH THE PROVISIONS OF MASS GENERAL LAWS (TER. ED.) CHAPTER 149, SECTIONS 44A-44I, INCLUSIVE AS AMENDED. THE TIME AND PLACE OF SUBMISSION OF SUB-BIDS SHALL BE AS SET FORTH IN THE INSTRUCTIONS TO BIDDERS.

B. EACH SUB-BID FILED WITH THE AWARDING AUTHORITY MUST E ACCOMPANIED BY BID BOND, OR CASH OR CERTIFIED CHECK OR A TREASURER'S CHECK OR CASHIER'S CHECK ISSUED BY A RESPONSIBLE BANK OR TRUST COMPANY, PAYABLE TO THE TOWN OF EVERETT IN THE AMOUNT OF FIVE PERCENT (5%) OF THE BID AMOUNT. A SUB-BID ACCOMPANIED BY ANY OTHER FORM OF BID DEPOSIT WILL BE REJECTED.

C. EACH SUB-BID, SUBMITTED FOR THE WORK OF THIS SECTION, SHALL BE ON A FORM FURNISHED BY THE AWARDING AUTHORITY, AS REQUIRED BY SECTION 44F OF CHAPTER 149, AS AMENDED.

D. REFERENCE DRAWINGS: REFER TO THE LIST OF DRAWINGS BOUND IN THE FRONT OF THIS SPECIFICATION.

E. THE FOLLOWING SPECIFICATIONS SECTIONS SHALL BE PART OF THIS FILE SUB-BID SECTION:
   DIVISION 21 - FIRE PROTECTION
   21 0000 - FIRE PROTECTION

F. THE WORK OF THIS SECTION IS SHOWN ON DRAWINGS:
   FP-001 FIRE PROTECTION LEGEND
   FP-100 FIRE PROTECTION BASEMENT NEW WORK PLAN

G. THE TRADE CONTRACTOR'S ATTENTION IS DIRECTED TO THE GENERAL CONDITIONS. THIS TRADE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR ALL PERMITS AND INSPECTIONS REQUIRED TO COMPLETE ALL WORK DESCRIBED IN THIS SECTION.

PART 2 - MATERIALS

2.01

PART 3 - EXECUTION

3.01

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PROJECT

OLD EVERETT HIGH SCHOOL - TASK 5

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CLIENT

CITY OF EVERETT, MA

CONSULANTS

REGISTRATION

Issue Date

KEYPLAN

ISSUE / REVISION

#	Date	Description

NOT FOR CONSTRUCTION

PROJECT NUMBER

BEMS26

SHEET TITLE

FIRE PROTECTION SPECIFICATIONS

SHEET NUMBER

FP-002

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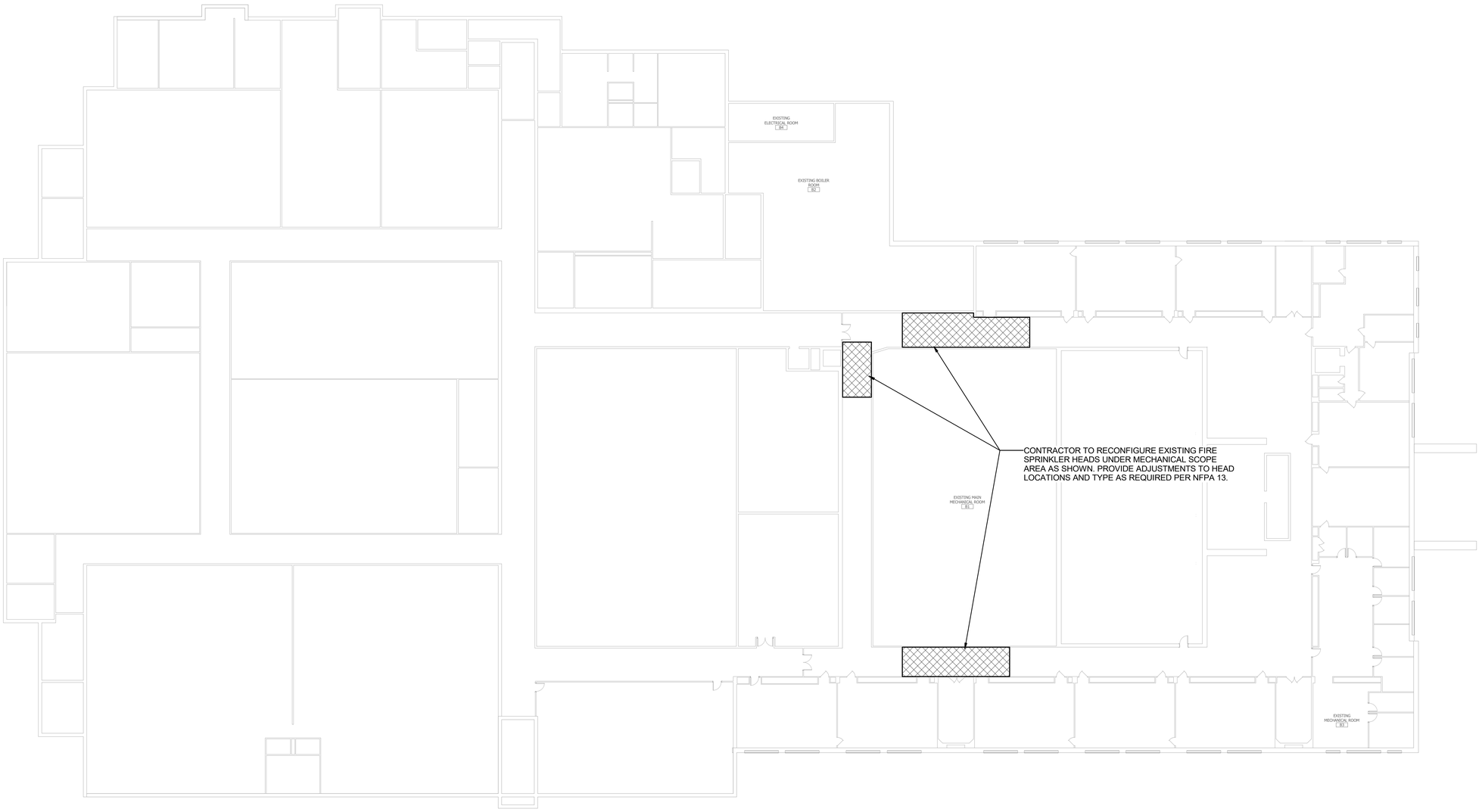
TAGGED NOTES



1 FIRE PROTECTION BASEMENT NEW WORK PLAN
SCALE: 1/16" = 1'-0"

NOT FOR CONSTRUCTION

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PROJECT
OLD EVERETT HIGH SCHOOL - TASK 5
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#	Date	Description

PROJECT NUMBER
BEMS26

SHEET TITLE
FIRE PROTECTION BASEMENT NEW WORK PLAN

SHEET NUMBER
FP-100

PLUMBING DEMOLITION NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS PRIOR TO PROCEEDING WITH THE WORK. EXISTING CONDITIONS SHOWN IN THESE DOCUMENTS ARE APPROXIMATE AND WERE DERIVED FROM AVAILABLE RECORD DRAWINGS PROVIDED BY THE OWNER AND FIELD OBSERVATIONS.
2. THE EXISTING CONDITIONS FOUND IN THE FIELD MAY DIFFER DUE TO PAST ALTERATIONS THAT HAVE NOT BEEN DOCUMENTED. NOTIFY ARCHITECT IMMEDIATELY OF DEVIATIONS IN EXISTING CONDITIONS THAT MAY AFFECT THE FUTURE CONSTRUCTION OF THE NEW WORK.
3. THE PLUMBING CONTRACTOR SHALL DEMOLISH PLUMBING SYSTEMS AS SHOWN INCLUDING, BUT NOT LIMITED TO, SANITARY WASTE & VENT, DOMESTIC WATER & MEDICAL GAS SYSTEMS, INCLUDING ANY VALVES, HANGERS, INSULATION AND APPURTENANCES, PLUMBING FIXTURES, CARRIERS, BACKFLOW PREVENTERS, CONTROLS AND FLOOR DRAINS.
4. THE PLUMBING CONTRACTOR SHALL DEMOLISH ALL PLUMBING SYSTEMS SERVING FIXTURES AND EQUIPMENT INDICATED TO BE REMOVED. SYSTEMS SHALL BE DEMOLISHED. SERVICE TO EXISTING FIXTURES TO REMAIN SHALL BE MAINTAINED. MINIMIZE ALL DISRUPTIONS TO EXISTING FIXTURES TO REMAIN.
5. THE PLUMBING CONTRACTOR SHALL VERIFY THAT PIPING IS INACTIVE AND REMOVAL DOES NOT IMPAIR THE OPERATION OF OTHER FIXTURES OR EQUIPMENT WITHIN THE BUILDING PRIOR TO REMOVAL.
6. ANY ABANDONED WASTE, VENT, WATER OR MEDICAL GAS PIPING ENCOUNTERED SHALL BE REMOVED.
7. ALL DEMOLISHED SERVICES AND THEIR ASSOCIATED SUPPORT HANGER SYSTEMS SHALL BE REMOVED IN THEIR ENTIRETY.
8. ELECTRICAL CONTRACTOR SHALL MAKE SAFE AND DISCONNECT ALL ELECTRICAL POWER / CONTROLS FROM ANY EXISTING PLUMBING EQUIPMENT PRIOR TO PLUMBING CONTRACTOR REMOVING THE EQUIPMENT.
9. THERE ARE PLUMBING COMPONENTS AND APPURTENANCES THAT SHALL BE REMOVED THAT ARE NOT SHOWN TO MAINTAIN CLARITY OF THIS PLAN. PLUMBING CONTRACTOR IS ENCOURAGED TO CONDUCT A FIELD INSPECTION TO GAIN A BETTER UNDERSTANDING OF THE SCOPE OF DEMOLITION PRIOR TO SUBMITTING PRICING.

PLUMBING HAZARDOUS MATERIALS NOTES

1. THE CONTRACTOR IT IS HEREBY ADVISED THAT IS POSSIBLE THAT ASBESTOS AND/OR OTHER HAZARDOUS MATERIALS ARE OR WERE PRESENT IN THIS BUILDING(S). ANY WORKER, OCCUPANT, VISITOR, ETC., WHO ENCOUNTERS ANY MATERIAL OF WHOSE CONTENT THEY ARE NOT CERTAIN SHALL PROMPTLY REPORT THE EXISTENCE AND LOCATION OF THAT MATERIAL TO THE OWNER. FURTHERMORE, THE CONTRACTOR SHALL INSURE THAT NO ONE COMES NEAR TO OR IN CONTACT WITH ANY SUCH MATERIAL OR FUMES THEREFROM UNTIL ITS CONTENT CAN BE ASCERTAINED TO BE NON-HAZARDOUS.
2. CMTA, INC. HAS NO EXPERTISE IN THE DETERMINATION OF THE PRESENCE OF ANY HAZARDOUS MATERIAL. THEREFORE, NO ATTEMPT HAS BEEN MADE BY CMTA TO IDENTIFY THE EXISTENCE OR LOCATION OF ANY SUCH HAZARDOUS MATERIAL. FURTHERMORE, CMTA NOR ANY AFFILIATE HEREOF WILL NOT OFFER OR MAKE ANY RECOMMENDATIONS RELATIVE TO THE REMOVAL, HANDLING OR DISPOSAL OF SUCH MATERIAL.
3. IF THE WORK WHICH IS TO BE PERFORMED INTERFACES, CONNECTS OR RELATES IN ANY PHYSICAL WAY WITH OR TO EXISTING COMPONENTS WHICH CONTAIN OR BEAR ANY HAZARDOUS MATERIAL, ASBESTOS BEING ONE, THEN IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO CONTACT THE OWNER AND SO ADVISE HIM IMMEDIATELY.
4. THE CONTRACTOR BY EXECUTION OF THE CONTRACT FOR ANY WORK AND/OR BY THE ACCOMPLISHMENT OF ANY WORK THEREBY AGREE TO RING NO CLAIM RELATIVE TO HAZARDOUS MATERIALS FOR NEGLIGENCE, BREACH OF CONTRACT, INDEMNITY, OR ANY OTHER SUCH ITEM AGAINST CMTA, ITS PRINCIPALS, EMPLOYEES, AGENTS OR CONSULTANTS. ALSO, THE CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD CMTA, ITS PRINCIPALS, EMPLOYEES, AGENTS AND CONSULTANTS HARMLESS FROM ANY SUCH RELATED CLAIMS WHICH MAY BE BROUGHT BY ANY SUBCONTRACTORS, SUPPLIERS OR ANY OTHER THIRD PARTIES.
5. THE CONTRACTOR IS DIRECTED TO THE SPECIFICATIONS FOR FURTHER INFORMATION.

PLUMBING PHASING NOTES

1. THIS PROJECT INTERFACES EXTENSIVELY WITH EXISTING BUILDING SERVICES. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE AND PHASE ALL TIE-INS AND INTERRUPTIONS OF EXISTING SERVICES TO MINIMIZE OR ELIMINATE DOWNTIME. AS AN EXAMPLE, MAIN GAS SERVICE, WATER SERVICE, ELECTRICAL SERVICE, HVAC SERVICES, STEAM GENERATION, ETC., WILL BE AFFECTED AND REPLACED OR MOVED DURING THIS PROJECT. THE CONTRACTOR SHALL INSTALL ALL NEW SERVICES AND EQUIPMENT AND HAVE THEM TESTED AND FULLY AND RELIABLY FUNCTIONAL PRIOR TO INTERRUPTING, RELOCATING OR REMOVING ANY EXISTING SERVICES. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO BARE ANY AND ALL COSTS ASSOCIATED WITH THIS PHASING, INCLUDING TEMPORARY SERVICES, TEMPORARY RELOCATION, PREMIUM TIME WORK, ETC. CONTRACTOR SHALL COORDINATE ALL SAID WORK WITH THE OWNER AND APPLICABLE UTILITIES PER THE CONTRACT DOCUMENTS.

PLUMBING GENERAL NOTES

1. COORDINATE THE LOCATION OF DRAINS, THERMOSTATS, GAS OUTLETS, ETC., WITH ALL CASEWORK EQUIPMENT, MECHANICAL ROOM EQUIPMENT, ETC., PRIOR TO COMMENCING INSTALLATION. WORK NOT SO COORDINATED SHALL BE REMOVED AND PROPERLY INSTALLED AT THE EXPENSE OF THE CONTRACTOR.
2. THE CONTRACTOR SHALL EXERCISE EXTREME CARE IN THE COURSE OF THEIR WORK SO AS TO ENSURE THAT THEY DO NOT INTERRUPT ANY EXISTING SERVICE FOR SAFETY PURPOSES. PAY PARTICULAR ATTENTION TO THIS PRECAUTION RELATIVE TO NATURAL GAS AND ELECTRICAL LINES. VERIFY THE LOCATION, SIZE, TYPE, ETC., OF EACH UNDERGROUND OR OVERHEAD UTILITY. ALL WORK SHALL BE PERFORMED IN ACCORD WITH ALL FEDERAL, STATE AND/OR LOCAL RULES, REGULATIONS, STANDARD AND SAFETY REQUIREMENTS. UTILITIES SHALL BE INSTALLED IN ACCORD WITH THE APPLICABLE MUNICIPALITY OR UTILITY COMPANY STANDARDS. IN ALL CASES, THE MOST STRINGENT REQUIREMENT SHALL APPLY.
3. WHERE WORK IS REQUIRED ABOVE EXISTING LAY-IN, PLASTER OR GYPSUM BOARD CEILINGS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL AND REINSTALLATION (OR REPLACEMENT, IF DAMAGED) OF ALL CEILING OR TILE AND GRID MEMBERS NECESSARY TO PERFORM HIS WORK. NEW TILE AND GRID SHALL MATCH THE SURROUNDING AREAS. ALL PATCHING WORK SHALL MATCH ADJACENT SURFACES.
4. ALL NEW WORK SHALL BE HUNG FROM STRUCTURE, NOT FROM THE WORK OF OTHER TRADES, WHETHER EXISTING OR NEW.
5. COORDINATE ALL WORK WITH PROJECT PHASING REQUIREMENTS.
6. PATCH, REPAIR AND PAINT OR PROVIDE WALL COVERING FOR (TO OWNER'S STANDARDS) EXISTING WALLS, CEILINGS, ETC., THAT ARE TO REMAIN IF DAMAGED DURING CONSTRUCTION. REPAIRS SHALL MATCH ADJACENT SURFACES TO THE SATISFACTION OF THE ARCHITECT AND OWNER.
7. OBSERVE ALL APPLICABLE CODES, RULES AND REGULATIONS THAT MAY APPLY TO THE WORK UNDER THIS CONTRACT. (CITY, COUNTY, LOCAL, FEDERAL, MUNICIPALITY, UTILITY COMPANY, COMMONWEALTH OF MASSACHUSETTS, ETC.).
8. CONTRACTOR SHALL BE AWARE OF UNSEEN PLUMBING WORK DURING DEMOLITION. IF ITEMS ARE UNCOVERED DURING DEMOLITION THEN FIELD VERIFY THE USE OF THE ITEMS AND PLAN AN ALTERNATE ROUTE TO RUN THESE ITEMS. THEN CONTACT THE ENGINEERS TO REVIEW THE ROUTING.
9. IF AREA OF CONSTRUCTION HAS A POST TENSION FLOOR SLAB. CONTRACTOR SHALL USE ULTRA SOUND OR OTHER APPROVED METHODS TO SURVEY THE EXISTING FLOOR STRUCTURE BEFORE MAKING ANY AND ALL FLOOR PENETRATIONS.
10. WHERE FIRE PROOFING IS SPRAYED ON EXISTING STRUCTURE ALL EXISTING CONDUITS, WATER, HYDRONIC, STEAM, CHILLED WATER, FIRE PROTECTION LINES, MED GAS, ETC. SHALL BE LOWERED TO BE BELOW FULL THICKNESS OF FIRE PROOFING WITH NO INTERFERENCE.
11. ALL PENETRATIONS OF FIRE AND SMOKE RATED ASSEMBLIES SHALL BE APPROPRIATELY FIRE STOPPED PER AN APPROVED U.L. LISTED STANDARD. CONTRACTOR SHALL PAY PARTICULAR ATTENTION TO INSULATED PIPING PENETRATIONS.
12. ALL WORK REQUIRING DOWNTIME OF ANY AREA IN THE BUILDING, SHALL BE SCHEDULED 2 WEEKS IN ADVANCE, AND SHALL COMPLY WITH INTERIM LIFE SAFETY MEASURES.
13. ALL PIPING IN ROOMS WITH CEILINGS SHALL BE ABOVE CEILING EXCEPT AS NOTED.
14. NO WORK SHALL BE INSTALLED IN VIOLATION OF ANY GOVERNING CODES. ANY WORK SHOWN ON THE DRAWINGS WHICH IS IN VIOLATION OF SUCH CODES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE AND SHALL BE RESOLVED PRIOR TO THE INSTALLATION OF THE WORK.
15. LOCATIONS OF PIPING AND EQUIPMENT ARE APPROXIMATE AND SUBJECT TO MINOR ADJUSTMENTS IN THE FIELD. DO NOT SCALE THE DRAWINGS.
16. ALL OFFSETS IN PIPING ARE NOT NECESSARILY SHOWN. PROVIDE ADDITIONAL OFFSETS WHERE NECESSARY.
17. THE CONTRACTOR IS RESPONSIBLE FOR ALL UTILITY COMPANY FEES OR OTHER COSTS THAT ANY UTILITY COMPANY MAY REQUIRE TO COMPLETE THEIR WORK. (GAS, SEWER, WATER, ETC.).
18. INSTALL ALL PIPING AND EQUIPMENT IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTION. IF IN CONFLICT WITH THE DESIGN INDICATED IN CONTRACT DOCUMENTS, ADVISE THE ENGINEERS PRIOR TO INSTALLATION FOR CLARIFICATION. PROVIDE RECOMMENDED ACCESS AND SERVICE CLEARANCES FOR ALL EQUIPMENT.
19. SEAL AIRTIGHT AROUND ALL PIPING PENETRATIONS THROUGH WALLS, FLOORS AND ROOF. PROVIDE FIRE STOPPING IN FIRE PARTITION.
20. THE CONTRACTOR SHALL RELOCATE OR AVOID ANY EXISTING EQUIPMENT APPURTENANCES, ETC., THAT CONFLICT WITH NEW WORK.
21. WHERE MOUNTING HEIGHTS ARE NOT INDICATED OR ARE IN CONFLICT WITH ANY OTHER BUILDING SYSTEM, CONTACT THE ENGINEERS BEFORE INSTALLATION. REFER ALSO TO ARCHITECTURAL WALL INTERIOR AND EXTERIOR WALL ELEVATIONS, CEILING HEIGHTS AND OTHER DETAIL OF THESE DOCUMENTS.
22. ANY VIBRATING, OSCILLATING OR OTHER NOISE OR MOTION PRODUCING EQUIPMENT SHALL BE ISOLATED FROM SURROUNDING SYSTEMS IN AN APPROVED MANNER. NOISY OR STRUCTURALLY DAMAGING INSTALLATIONS SHALL BE SATISFACTORILY REPLACED OR REPAIRED AT THE INSTALLING CONTRACTOR'S EXPENSE. THE FINAL DECISION ON THE SUITABILITY OF A PARTICULAR INSTALLATION'S ACCEPTABILITY SHALL BE THAT OF THE ENGINEER.
23. DEVIATIONS IN SIZE, CAPACITIES, FIT, FINISH, ETC. FOR EQUIPMENT FROM THAT USED AS BASIS OF DESIGN SHALL BE THE RESPONSIBILITY OF THE PURCHASER OF THAT EQUIPMENT. ANY PROVISIONS REQUIRED TO ACCOMMODATE A DEVIATION, WHETHER APPROVED BY THE ENGINEERS OR NOT, SHALL BE THE RESPONSIBILITY OF THE PURCHASER.
24. VALVE REQUIRING ACCESS SHALL NOT BE LOCATED ABOVE A HARD CEILING. IF THIS IS NOT POSSIBLE, THEN AN APPROPRIATELY SIZED ACCESS DOOR SHALL BE PLACED UNDER THE ITEM TO ALLOW EASY MAINTENANCE AND ADJUSTMENT. ADDITIONALLY ALL SUCH ITEMS SHALL NOT BE LOCATED AN UNREASONABLE DISTANCE ABOVE THE CEILINGS. IN GENERAL ALL SUCH ITEMS UNLESS INDICATED OTHERWISE SHALL BE MOUNTED SIX TO TWELVE INCHES ABOVE THE CEILING. IF IN DOUBT, CONTACT ENGINEER PRIOR TO INSTALLING.
25. ALL MANHOLES, VAULTS AND SIMILAR UNDERGROUND STRUCTURES SHALL HAVE THE TOP ELEVATION SET FLUSH WITH FINISHED GRADE UNLESS SPECIFICALLY NOTED OTHERWISE.
26. WHEN RUNNING ANY TYPE OF PIPING BELOW A FOOTER, OR IN THE ZONE OF INFLUENCE THE PIPING SHALL BE BACKFILLED WITH CEMENTITIOUS FLOWABLE FILL PER SPECIFICATIONS. WHENEVER POSSIBLE, LOCATE PIPING OUTSIDE OF THE ZONE OF INFLUENCE. THE ZONE OF INFLUENCE IS THE AREA UNDER THE FOOTER WITHIN A 45 DEGREE ANGLE PROJECTING DOWN FROM THE BOTTOM EDGE OF THE FOOTER OF ALL SIDES OF THE FOOTER. ADDITIONALLY, GREASE TRAPS, MANHOLES, VAULTS AND OTHER UNDERGROUND STRUCTURES SHALL BE HELD AWAY FROM BUILDING WALLS FAR ENOUGH TO BE OUTSIDE OF THE ZONE OF INFLUENCE.
27. WORK IN CONFINED AREAS SHALL BE IN ACCORDANCE WITH THE OWNER'S SAFETY POLICY REQUIREMENTS.

ABBREVIATIONS

AC	ALTERNATING CURRENT
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AMP	AMPERE (AMOP,AMPS)
ANSI	AMERICAN NATIONAL STANDARD INSTITUTE
AVG	AVERAGE
BAS	BUILDING AUTOMATION SYSTEM
BTU	BRITISH THERMAL UNIT
CAP	CAPACITY
CD	CONDENSATE DRAIN
CFCI	CONTRACTOR FURNISH, CONTRACTOR INSTALLED
CFM	CUBIC FEET PER MIN
C I	CAST IRON
CLG	CEILING
CLR	CLEAR
CO	CARBON MONOXIDE
COND	CONDENS (-ER, -ING, -ATION, -ATE)
CTE	CONNECT TO EXISTING
CU FT	CUBIC FEET
CU IN	CUBIC INCHES
CV	VALVE FLOW COEFFICIENT
dB	DECIBEL
DB	DRY BULB
DC	DIRECT CURRENT
DEG	DEGREE (-S)
DIA	DIAMETER (-S)
DN	DOWN
DWG	DRAWING
EC	ELECTRICAL CONTRACTOR
ENGR	ENGINEER
EQ	EQUAL
ETBR	EXISTING TO BE REMOVED
ETR	EXISTING TO REMAIN
EXT	EXTERIOR
FL	FLOOR
FPC	FIRE PROTECTION CONTRACTOR
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FT	FEET OR FOOT
FUT	FUTURE
GA	GAGE/GAUGE
GAL	GALLON (-S)
GC	GENERAL CONTRACTOR
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLAONS PER MINUTE
HD	HEAD
HG	MERCURY
HORZ	HORIZONTAL
HP	H (-ORSEPOWER, -EAT PUMP)
HR	HOUR (-S)
HVAC	HEATING, VENTILATING, & AIR-CONDITIONING
Hz	HERTZ
ID	I (-DENTIFICATION, -NSIDE DIAMETER, -NSIDE DIMENSION)
IN	INCH (-ES)
INSUL	INSULAT (-ED, -ION)
INT	INTER (-IOR, -ERVAL)
KW	KILOWATT
kWh	KILWATT HOUR
LBS	POUNDS
LF	LINEAR FEET/FOOT
MAX	MAXIMUM
MBH	BTU PER HOUR [THOUSANDS]
MFR	MANUFACTURER
MIN	MIN (-IMUM, -UTE)
MISC	MISCELLANEOUS
MTG	MOUNTING
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN OR NUMBER
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DI (-AMETER, -MENSION)
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURHISHED, OWNER INSTALLED
OZ	OUNCE (-S)
PC	PLUMBING CONTRACTOR
PD	PRESSURE DROP
PH	PHASE [ELECTRICAL]
PLBG	PLUMBING
PPM	PARTS PER MILLION
PRS	PRESSURE REDUCING STATION
PRV	PRESSURE REDUCING VALVE (STEAM, WATER, GAS)
PSI	POUNDS PER SQUARE INCH
PSIG	PSI GAUGE
RPM	REVOLUTIONS PER MINUTE
SQ	SQUARE
SQ FT	SQUARE FEET OR FOOT
SQ IN	SQUARE INCH OR INCHES
S/T	SHELL AND TUBE
TAB	TESTING AND BALANCING
TBD	TO BE DETERMINED
TE	TOP ELEVATION
TEMP	TEMPERATURE
TPA	TRAP PRIMER ADAPTER
TYP	TYPICAL
V	VOLT (-AGE, -S)
VAR	VARIABLE (-ABLE, -IES)
VFD	VARIABLE FREQUENCY DRIVE
W	WATT (-AGE, -S)
WT	WEIGHT
W/	WITH
W/O	WITHOUT
%	PERCENT
ΔP	DIFFERENTIAL PRESSURE
ΔT	TEMPERATURE DIFFERENCE
℄	CENTERLINE

GENERAL SYMBOLS

TAGGED NOTE DESIGNATOR	#
REVISION TRIANGLE	1
POINT OF CONNECTION / CONNECT TO EXISTING	
POINT OF DEMOLITION	
ROOM TAG	ROOM NAME RM #1

PLUMBING PIPING LEGEND

PIPE ELBOW TURNING UP	
PIPE ELBOW TURNING DOWN	
PIPE TEE; CONNECTION ON TOP	
PIPE TEE; CONNECTION ON BOTTOM	
PIPE CAP	
ACID VENT	AVT
ACID WASTE	AW
COMPRESSED AIR	CA
CARBON DIOXIDE	CO2
DOMESTIC COLD WATER (CW)	CW
DOMESTIC HOT WATER (HW)	HW HW(#°F)
DOMESTIC HOT WATER RETURN(HWR)	HWR HWR(#°F)
NATURAL GAS	G
GREASE WASTE	GW
GREASE VENT	GV
INDIRECT WASTE	IW
INDIRECT WASTE	IW
LAB AIR	LA
LAB AIR INTAKE	LAI
LAB VACUUM	LVAC
LAB VACUUM EXHAUST	LVE
MEDICAL AIR INTAKE	MAI
MEDICAL VACUUM	MV
MEDICAL VACUUM EXHAUST	MVE
NON-POTABLE HOT WATER RETURN	NHWR
NON-POTABLE COLD WATER	NCW
NON-POTABLE HOT WATER	NHW
NON-POTABLE HOT WATER RETURN	NHWR
NITROGEN	N
NITROUS OXIDE	N2O
OXYGEN	OX
PUMPED DISCHARGE	PD
RAINWATER	RW
OVERFLOW RAINWATER	ORW
SANITARY	S
WASTE	W
VENT	V

PLUMBING SYMBOL LEGEND

FLEXIBLE PIPE CONNECTION	
PIPING UNION	
THERMOMETER	
PETE'S PLUG; TEMPERATURE/PRESSURE PORT	

VALVE SYMBOL LEGEND

TWO-WAY CONTROL VALVE	
THREE-WAY CONTROL VALVE	
BALANCING VALVE ASSEMBLY	
BALL VALVE	
BUTTERFLY VALVE	
STRAINER	
MANUAL ISOLATION VALVE	
GLOBE VALVE	
OS&Y (GATE) VALVE	
PRESSURE REDUCING VALVE (GAS, WATER, ETC.)	
CHECK VALVE	
REDUCED PRESSURE BACKFLOW PREVENTER	

SHEET LIST - PLUMBING

SHEET #	SHEET NAME
P-001	PLUMBING LEGEND
P-002	PLUMBING SPECIFICATIONS
P-100	PLUMBING BASEMENT NEW WORK PLAN

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PROJECT

OLD EVERETT HIGH SCHOOL - TASK 5

548 Broadway, Everett, MA 02149

CLIENT

CITY OF EVERETT, MA

CONSULANTS

REGISTRATION

Issue Date

KEYPLAN

ISSUE / REVISION

#	Date	Description

NOT FOR CONSTRUCTION

PROJECT NUMBER

BEMS26

SHEET TITLE

PLUMBING LEGEND

SHEET NUMBER

P-001

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DIVISION 22: PLUMBING SPECIFICATIONS

PART 1 - GENERAL

1.01 DESCRIPTION

A. ATTENTION IS DIRECTED TO THE CONTRACT AND GENERAL CONDITIONS AND ALL SECTIONS WITH DIVISION 1 - GENERAL REQUIREMENTS, WHICH ARE HEREBY MADE A PART OF THIS SECTION OF THE SPECIFICATIONS.

B. TIME, MANNER, AND REQUIREMENTS FOR SUBMITTING TRADE-BIDS:

1. TRADE CONTRACTOR BIDS FOR WORK UNDER THIS SECTION SHALL BE FOR THE COMPLETE WORK AND SHALL BE FILED IN A SEALED ENVELOPE WITH THE AWARDING AUTHORITY AT A TIME AND PLACE AS STIPULATED IN THE "NOTICE TO CONTRACTORS".
   THE FOLLOWING SHALL APPEAR ON THE UPPER LEFT HAND CORNER OF THE ENVELOPE.
   NAME OF TRADE CONTRACT BIDDER: _____
   TRADE CONTRACTOR BID FOR SECTION: _____
2. EVERY TRADE CONTRACTOR BIDDER MUST BE CERTIFIED BY THE DIVISION OF CAPITAL ASSET MANAGEMENT FOR THE DOLLAR AMOUNT OF THEIR BID. TRADE BIDS WILL BE VALID ONLY WHEN ACCOMPANIED BY A CERTIFICATE OF ELIGIBILITY AND AN UPDATE STATEMENT.
3. EACH TRADE CONTRACTOR BID SUBMITTED FOR WORK UNDER THIS SECTION SHALL BE ON FORMS FURNISHED BY THE AWARDING AUTHORITY AS REQUIRED BY SECTION 44F OF CHAPTER 149 OF THE GENERAL LAWS, AS AMENDED. SUB-BID FORMS ARE ATTACHED TO THIS DOCUMENT.
4. TRADE BIDS FILED WITH THE AWARDING AUTHORITY SHALL BE ACCOMPANIED BY A BID BOND OR CASH OR CERTIFIED CHECK OR A TREASURER'S OR CASHIER'S CHECK ISSUED BY A RESPONSIBLE BANK OR TRUST COMPANY PAYABLE TO THE TOWN OF EVERETT IN THE AMOUNT OF 5 PERCENT OF THE BID. A TRADE CONTRACTOR BID ACCOMPANIED BY ANY OTHER FORM OF BID DEPOSIT THAN THOSE SPECIFIED WILL BE REJECTED.

C. CAREFULLY EXAMINE ALL THE CONTRACT DOCUMENTS FOR REQUIREMENTS WHICH AFFECT THE WORK OF THIS SECTION. THE EXACT SCOPE OF THIS SECTION CANNOT BE DETERMINED WITHOUT A THOROUGH REVIEW OF ALL SPECIFICATION SECTIONS AND OTHER CONTRACT DOCUMENTS.

D. WHERE REFERRED TO, STANDARD SPECIFICATIONS, RECOMMENDATIONS OF TECHNICAL SOCIETIES, AND/OR MANUFACTURER'S ASSOCIATIONS, PLUS CODES OF FEDERAL, STATE, AND LOCAL AGENCIES SHALL INCLUDE ALL AMENDMENTS CURRENT AS OF DATE OF ISSUE OF THESE SPECIFICATIONS.

E. SUB-SUB-BID REQUIREMENTS:

1. SUB-SUB BIDS ARE REQUIRED FOR THIS SECTION. SUB-BIDDERS SHALL INCLUDE THE APPROPRIATE INFORMATION FOR THE LIST OF SUB SUB-BID CLASS OF WORK NOTED BELOW IN THIS PARAGRAPH.
   NONE
2. IF THE FILED SUB-BIDDER CUSTOMARILY PERFORMS THE ABOVE WORK WITH ITS OWN WORKFORCE, THE SUB-BIDDER SHOULD LIST ITS OWN NAME AND TRADE AND LEAVE THE DOLLAR AMOUNT BLANK.
3. IF THE FILED SUB-BIDDER DOES NOT CUSTOMARILY PERFORM THE CLASSES OF WORK WITH ITS OWN WORKFORCE, THE SUB-BIDDER SHOULD LIST THE NAME OF THE CONTRACTOR PERFORMING THE WORK, THE TRADE AND INSERT A DOLLAR AMOUNT.

1.02 GENERAL REQUIREMENTS

A. SUB-BIDS SHALL BE SUBMITTED IN ACCORDANCE WITH THE PROVISIONS OF MASS GENERAL LAWS (TER. ED.) CHAPTER 149, SECTIONS 44A-44I, INCLUSIVE AS AMENDED. THE TIME AND PLACE OF SUBMISSION OF SUB-BIDS SHALL BE AS SET FORTH IN THE INSTRUCTIONS TO BIDDERS.

B. EACH SUB-BID FILED WITH THE AWARDING AUTHORITY MUST E ACCOMPANIED BY BID BOND, OR CASH OR CERTIFIED CHECK OR A TREASURER'S CHECK OR CASHIER'S CHECK ISSUED BY A RESPONSIBLE BANK OR TRUST COMPANY, PAYABLE TO THE TOWN OF EVERETT IN THE AMOUNT OF FIVE PERCENT (5%) OF THE BID AMOUNT. A SUB-BID ACCOMPANIED BY ANY OTHER FORM OF BID DEPOSIT WILL BE REJECTED.

C. EACH SUB-BID, SUBMITTED FOR THE WORK OF THIS SECTION, SHALL BE ON A FORM FURNISHED BY THE AWARDING AUTHORITY, AS REQUIRED BY SECTION 44F OF CHAPTER 149, AS AMENDED.

D. REFERENCE DRAWINGS: REFER TO THE LIST OF DRAWINGS BOUND IN THE FRONT OF THIS SPECIFICATION.

E. THE FOLLOWING SPECIFICATIONS SECTIONS SHALL BE PART OF THIS FILE SUB-BID SECTION:
   DIVISION 22 - PLUMBING
   22 0000 - PLUMBING

F. THE WORK OF THIS SECTION IS SHOWN ON DRAWINGS:
   P-001 PLUMBING LEGEND
   P-100 PLUMBING BASEMENT NEW WORK PLAN

G. THE TRADE CONTRACTOR'S ATTENTION IS DIRECTED TO THE GENERAL CONDITIONS. THIS TRADE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR ALL PERMITS AND INSPECTIONS REQUIRED TO COMPLETE ALL WORK DESCRIBED IN THIS SECTION.

PART 2 - MATERIALS

2.01

PART 3 - EXECUTION

3.01

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PROJECT

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CONSULANTS

REGISTRATION

Issue Date

KEYPLAN

ISSUE / REVISION

#	Date	Description

PROJECT NUMBER

BEMS26

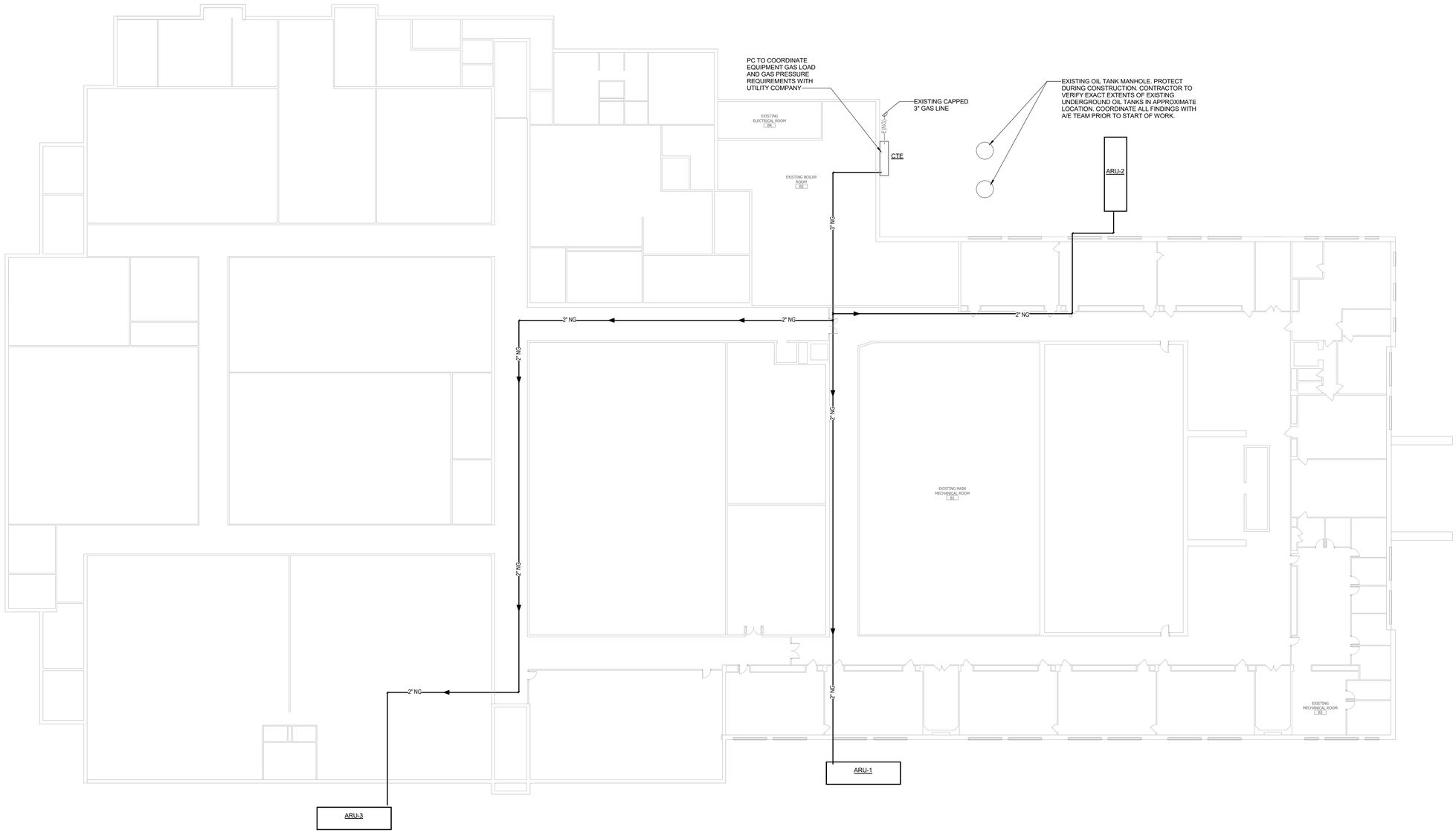
SHEET TITLE

PLUMBING SPECIFICATIONS

SHEET NUMBER

P-002

TAGGED NOTES



1 PLUMBING BASEMENT NEW WORK PLAN
SCALE: 1/16" = 1'-0"

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KEYPLAN

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#	Date	Description

PROJECT NUMBER
BEMS26

SHEET TITLE
PLUMBING BASEMENT NEW WORK PLAN

SHEET NUMBER
P-100

MECHANICAL PHASING NOTES

1. THIS PROJECT INTERFACES EXTENSIVELY WITH EXISTING BUILDING SERVICES. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE AND PHASE ALL TIE-INS AND INTERRUPTIONS OF EXISTING SERVICES TO MINIMIZE OR ELIMINATE DOWNTIME.
2. THE CONTRACTOR SHALL INSTALL ALL NEW SERVICES AND EQUIPMENT AND HAVE THEM TESTED AND FULLY AND RELIABLY FUNCTIONAL PRIOR TO INTERRUPTING, RELOCATING, OR REMOVING ANY EXISTING SERVICES.
3. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO BEAR ANY AND ALL COSTS ASSOCIATED WITH THIS PHASING, INCLUDING TEMPORARY SERVICES, TEMPORARY RELOCATION, PREMIUM TIME WORK, ETC. CONTRACTOR SHALL COORDINATE ALL SAID WORK WITH THE OWNER AND APPLICABLE UTILITIES PER THE CONTRACT DOCUMENTS.

MECHANICALHAZARDOUS MATERIAL NOTES

1. THE CONTRACTOR IS HEREBY ADVISED THAT IT IS POSSIBLE THAT ASBESTOS AND/OR OTHER HAZARDOUS MATERIAL ARE OR WERE PRESENT IN THIS BUILDING(S), ANY WORKER, OCCUPANT, VISITOR, ETC., WHO ENCOUNTERS ANY MATERIAL OF WHOSE CONTENT THEY ARE NOT CERTAIN SHALL PROMPTLY REPORT THE EXISTENCE AND LOCATION OF THAT MATERIAL TO THE OWNER. FURTHERMORE, THE CONTRACTOR SHALL ENSURE THAT NO ONE COMES NEAR TO OR IN CONTACT WITH ANY SUCH MATERIAL OR FUMES THEREFROM UNTIL ITS CONTENT CAN BE ASCERTAINED TO BE NON-HAZARDOUS.
2. CMTA, INC. HAS NO EXPERTISE IN THE DETERMINATION OF THE PRESENCE OF ANY HAZARDOUS MATERIAL. THEREFORE, NO ATTEMPT HAS BEEN MADE BY CMTA TO INDENTIFY THE EXISTENCE OR LOCATION OF ANY SUCH HAZARDOUS MATERIAL. FURTHERMORE, CMTA NOR ANY AFFILIATE HEREOF WILL NOT OFFER OR MAKE ANY RECOMMENDATIONS RELATIVE TO THE REMOVAL, HANDLING OR DISPOSAL OF SUCH MATERIAL.
3. IF THE WORK WHICH IS TO BE PERFORMED INTERFACES, CONNECTS OR RELATES IN ANY PHYSICAL WAY WITH OR TO EXISTING COMPONENTS WHICH CONTAIN OR BEAR ANY HAZARDOUS MATERIAL, ASBESTOS BEING ONE, THEN IT SHALL BE THE CONTRACTORS SOLE RESPONSIBILITY TO CONTACT THE OWNER AND SO ADVISE HIM/HER IMMEDIATELY.
4. THE CONTRACTOR BY EXECUTION OF THE CONTRACT FOR ANY WORK AND/OR BY THE ACCOMPLISHMENT OF ANY WORK THEREBY AGREE TO BRING NO CLAIM RELATIVE TO HAZARDOUS MATERIALS FOR NEGLIGENCE, BREACH OF CONTRACT, INDEMNITY, OR ANY OTHER SUCH ITEM AGAINST CMTA, ITS PRINCIPALS, EMPLOYEES, AGENTS OR CONSULTANTS ARMLESS FROM ANY SUCH RELATED CLAIMS WHICH MAY BE BROUGHT BY ANY SUBCONTRACTORS, SUPPLIERS OR ANY OTHER THIRD PARTIES.
5. THE CONTRACTOR IS DIRECTED TO THE SPECIFICATIONS FOR FURTHER INFORMATION.

MECHANICAL GENERAL DEMOLITION NOTES

1. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR AREAS IN WHICH THE CEILING IS REMAINING. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING AND REINSTALLING THE EXISTING CEILING AS REQUIRED. TEMPORARILY SUPPORT LIGHTS, DIFFUSERS, CEILING, ETC. REPLACE BROKEN CEILING TILES WITH NEW AT NO ADDITIONAL COST TO THE OWNER. FIELD VERIFY EXACT REQUIREMENTS.
2. DURING SPRINKLER SYSTEM OUTAGES, THE CONTRACTORS SHALL PROVIDE FIRE WATCH OF AREAS WITH OUTAGES.
3. ALL EXISITNG BUILDING FINISHES SHALL BE PROTECTED DURING THE DEMOLITION PHASE.
4. HEAVY DASHED LINES INDICATE ITEMS FOR REMOAL (UNO), AND LIGHT SOLID LINES INDICATE EXISTING ITEMS TO REMAIN.
5. COORDINATE DISPOSAL OF ALL FIXTURES, DEVICES, ETC. (INDICATED FOR DEMOLITION) WITH THE OWNER.
6. THERE ARE MECHANICAL COMPONENTS AND SYSTEMS APPURTENANANCES THAT SHALL BE REMOVED AS PART OF DEMOLITION THAT ARE NOT SHOWN TO MAINTAIN CLARITY OF THIS PLAN. MC IS ENCOURAGED TO CONDUCT A FIELD INSPECTION TO GAIN A BETTER UNDERSTANDING OF THE SCOPE OF DEMOLITION PRIOR TO SUBMITTING PRICING.
7. MC SHALL COORDINATE WITH EC TO DISCONNECT AND MAKE SAFE OF ALL MECHANICAL EQUIPMENT TO BE DEMOLISHED WITH A POWER FEED PRIOR TO START OF DEMOLITION.
8. ATC/EMS SHALL DEMOLISH ALL EXISTING CONTROLS, END DEVICES, ENCLOSURES, WIRING, TUBING, HANGERS, AND APPURTENANCES.
9. MC SHALL RECLAIM ANY REFRIGERANT, OIL, ETC. ASSOCIATED WITH EQUIPMENT TO BE DEMOLISHED AND DISPOSE OF IN CODE COMPLIANT MANNER. PROVIDE OWNER WITH A HAZARDOUS WASTE LEGAL MANIFEST.
10. ALL PIPES AND DUCTS SHALL BE CUT BACK TO RISERS AND CAPPED. EACH SYSTEM WILL REQUIRE A SHUTDOWN FOR ISOLATION AND CAP PRIOR TO REMOVAL. ALL SHUTDOWNS SHALL OCCUR DURING NIGHTS AND WEEKENDS, COORDINATED WITH OWNER.
11. EC SHALL MAKE SAFE AND DISCONNECT ALL ELECTRICAL POWERCONTROLS FROM ANY EXISTING DESIGNATED MECHANICAL EQUIPMENT PRIOR TO MC REMOVING EQUIPMENT.
12. REFER TO STRUCTURAL DRAWINGS FOR EXISTING CEILING AND WALL TO BE OPENED TO EXPOSE EXISTING STRUCTURE AND THEN RE-SEALED.

MECHANICAL GENERAL NOTES

1. GENERAL NOTES, SYMBOLS LIST AND DETAILS ARE APPLICABLE TO ALL M SERIES DRAWINGS. SOME SYMBOLS OR ABBREVIATIONS MAY NOT BE APPLICABLE.
2. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS AND AS SPECIFIED.
3. CONTRACT DOCUMENT DRAWINGS FOR MECHANICAL WORK ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY. DETERMINE LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD.
4. THE MECHANICAL SUBCONTRACTOR SHALL BE REQUIRED TO READ THE SPECIFICATIONS AND REVIEW THE DRAWINGS FOR ALL DIVISIONS OF WORK. THE MECHANICAL SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF THE WORK OF THIS SECTION AND THE WORK OF ALL OTHER DIVISIONS OF WORK ASSOCIATED WITH THIS PROJECT.
5. THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS THAT ARE NOT DEFINED BY DIMENSIONS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED BY THE PROJECT SITE CONDITIONS AND SHALL HAVE THE APPROVAL OF THE ENGINEER PRIOR TO DEMOLITION. DO NOT SCALE THE DRAWINGS.
6. PROVIDE ACCESS PANELS FOR INSTALLATION IN WALLS AND CEILINGS, WHERE REQUIRED, TO SERVICE DAMPERS, VALVES, AND OTHER CONCEALED MECHANICAL EQUIPMENT. ACCESS PANELS SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR FOR INSTALLATION. ALL PIPING ABOVE GRADE SHALL BE PROPERLY SUPPORTED BY THE BUILDING STRUCTURE AND SHALL NOT REST ON CEILING STRUCTURE OR COMPONENTS.
7. ALL EQUIPMENT, PIPING, DUCTWORK, ETC. SHALL BE SUPPORTED AS DETAILED, SPECIFIED AND REQUIRED TO PROVIDE A VIBRATION FREE INSTALLATION.
8. LOCATIONS AND SIZES OF ALL FLOOR AND WALL OPENINGS SHALL BE COORDINATED WITH ALL TRADES INVOLVED.
9. ALL OPENINGS IN FIRE WALLS AND SMOKE BARRIERS DUE TO DUCTWORK, PIPING, CONDUIT, ETC. SHALL BE FIRE STOPPED WITH A PRODUCT SIMILAR TO HILTI OR APPROVED EQUAL.
10. INSTALL LINE SIZE ISOLATION VALVES ON BRANCH RUNOUTS AT THE RISER CONNECTION AND CAP.
11. ISOLATION BALL VALVES IN PIPING SYSTEMS ARE NOT SHOWN ON PLANS (FOR CLARITY) BUT ARE REQUIRED AT ALL PIPING BRANCHES THAT ARE CUT BACK AND CAPPED AT WALLS OR AT RISERS AS PART OF DEMOLITION.
12. ALL DUCTWORK AND PIPING WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. OFFSETS IN DUCTWORK AND PIPING AROUND OBSTRUCTIONS SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
13. VOLUME DAMPERS IN DUCT SYSTEMS ARE NOT SHOWN IN EVERY INSTANCE ON PLANS (FOR CLARITY) BUT ARE REQUIRED AT ALL DUCT BRANCHES THAT ARE CUT BACK AND CAPPED AT WALLS OR AT RISERS AS PART OF DEMOLITION. DAMPERS SHALL BE RUSKIN #CD-50 OR EQUIVALENT.
14. CERTAIN ITEMS SUCH AS RISES AND DROPS IN DUCTWORK, ACCESS DOORS, VOLUME DAMPERS, ETC. ARE INDICATED ON THE CONTRACT DOCUMENT DRAWINGS FOR CLARITY AT A SPECIFIC LOCATION REQUIREMENT AND SHALL NOT BE INTERPRETED AS THE EXTENT OF SUCH ITEMS.
15. ALL DUCTWORK DIMENSIONS AS SHOWN ON THE DRAWINGS ARE INTERNAL CLEAR DIMENSIONS.
16. COORDINATE EXACT REGISTER, GRILLE AND DIFFUSER LOCATIONS WITH THE EXISTING ATC.
17. PROVIDE THERMALLY INSULATED DUCT MOUNTED ACCESS DOORS FOR ALL FIRE DAMPERS, MOTORIZED DAMPERS, ETC. REQUIRING PERIODIC INSPECTION. CONTRACTOR SHALL DEMONSTRATE PROPER ACCESS AT EACH ACCESS DOOR TO ADEQUATELY SERVICE SYSTEM COMPONENTS.
18. IN AREAS OF WORK WHERE EXISTING ACT IS TO REMAIN, MC SHALL BE RESPONSIBLE FOR REMOVING AND REINSTALLING EXISTING ACT. DAMAGED ACT OR GRID SHALL BE REPLACED WITH NEW TO MATCH EXISTING.
19. OWNER SHALL BE RESPONSIBLE FOR ACM TESTING AND REMOVAL IN ALL AREAS OF WORK, IN COMPLIANCE WITH OSHA.
20. ALL SHUTDOWNS SHALL OCCUR DURING NIGHTS AND WEEKENDS COORDINATED WITH OWNER.
21. DRAWINGS ARE DIAGRAMMATIC; DETERMINE LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD.
22. DIMENSIONS SHOWN ON PLAN ARE HORIZONTAL. DIMENSIONS SHOWN IN ELEVATION ARE VERTICAL.
23. DETERMINE EXACT LOCATIONS OF EXISTING UTILITIES IN FIELD, WHETHER OR NOT SHOWN ON DRAWINGS. EXERCISE CAUTION AND IDENTIFY LOCATIONS OF UNMARKED UTILITY LINES AS NECESSARY TO PERFORM WORK OF THIS SECTION.
24. ALL MECHANICAL WORK SHALL BE IN ACCORDANCE WITH THE LATEST MECHANICAL CODES AND ALL APPLICABLE LOCAL CODES.
25. THIS CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WORK WITH ALL OTHER TRADES, INCLUDING BUT NOT LIMIT TO, ELECTRICAL, PLBG, PROCESS PIPING, SPRINKLER, STRUCTURAL AND GENERAL ARCHITECTURE.
26. ANY INTERFERENCE SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE AND SHALL BE RESOLVED PRIOR TO THE INSTALLATION OF THE WORK.
27. NO WORK SHALL BE INSTALLED IN VIOLATION OF ANY GOVERNING CODES. ANY WORK SHOWN ON THE DRAWINGS WHICH IS IN VIOLATION OF SUCH CODES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE AND SHALL BE RESOLVED PRIOR TO THE INSTALLATION OF THE WORK.
28. ALL PIPING PENETRATING EXTERIOR WALLS AND ROOFS SHALL BE FLASHED IN AN APPROVED MANNER AND SHALL BE SEALED WEATHERTIGHT. PIPING PENETRATING FIRE RATED PARTITIONS SHALL BE PROVIDED WITH FIRE RATED SEALS AS REQUIRED BY LOCAL CODE AUTHORITY.
29. MANUFACTURERS' MODEL NUMBERS ARE SPECIFIED SOLELY TO ESTABLISH STANDARDS OF QUALITY FOR PERFORMANCE AND MATERIALS. INSTALLATION SHALL ADHERE TO MANUFACTURERS' RECOMMENDATIONS.
30. PROVIDE ACCESS PANELS TO SYSTEM COMPONENTS THAT ARE CONCEALED AND REQUIRE PERIODIC SERVICE.
31. ALL PIPING ABOVE GRADE SHALL BE PROPERLY SUPPORTED BY THE BUILDING STRUCTURE AND SHALL NOT REST ON CEILING STRUCTURE OR COMPONENTS.
32. ALL HVAC EQUIPMENT, PIPING, INSULATION, ETC., INSTALLED IN PLENUM SPACES SHALL MEET CODE REQUIREMENTS FOR SMOKE AND COMBUSTIBILITY.
33. PROVIDE SHUTOFF VALVES ON ALL BRANCH PIPING AND ON ALL SUPPLIES TO INDIVIDUAL EQUIPMENT. PROVIDE VALVES ON ALL MAINS AND BRANCHES WHERE INDICATED ON DRAWINGS.
34. PROVIDE CLAMPS, OFFSETS, EXPANSION JOINTS, ANCHORS AND GUIDES AS NECESSARY TO PREVENT STRESS ON PIPING.
35. PROVIDE VENTS AT HIGH POINTS IN PIPING SYSTEMS AND DRAIN VALVES AT LOW POINTS.

ABBREVIATIONS

AC	ALTERNATING CURRENT
ACT	ACOUSTIC CEILING TILE
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AFR	ABOVE FINISHED ROOF
AHU	AIR HANDLING UNIT
AMP	AMPERE (AMOP,AMPS)
APD	AIR PRESSURE DROP
ARCH	ARCHITECT
AS	AIR SEPARATOR
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERANTION, AND AIR-CONDITIONING ENGINEERS
ATC	AUTOMATIC TEMPERATURE CONTROL
AVG	AVERAGE
BAS	BUILDING AUTOMATION SYSTEM
BHP	BRAKE HORSEPOWER
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BTU	BRITISH THERMAL UNIT
CAV	CONSTANT AIR VOLUME UNIT
CD	CONDENSATE DRAIN
CFM	CUBIC FEET PER MIN
CH	CHILLER
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CLG	CEILING
CO	CARBON MONOXIDE
CO2	CARBON DIOXIDE
CT	COOLING TOWER
CUH	CABINET UNIT HEATER
CV	VALVE FLOW COEFFICIENT
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
dB	DECIBEL
DB	DRY BULB
DC	DIRECT CURRENT
DCR	DUPLEX CONDENSATE RECIEVER
DDC	DIRECT DIGITAL CONTROLS
DEG	DEGREE (-S)
DIA	DIAMETER (-S)
DN	DOWN
DWG	DRAWING
DX	DIRECT EXPANSION
EA	EXHAUST AIR
EAHU	EXHAUST AIR HANDLING UNIT
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
ELEV	ELEVATION OR ELEVATOR
EMS	ENERGY MANAGEMENT SYSTEM
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
ETR	EXISTING TO REMAIN
EUH	ELECTRIC UNIT HEATER
EVAP	EVAPORAT (-E, -ING, -ED, -OR, -ION)
EWT	ENTERING WATER TEMPATURE
EXP	EXPANSION
EXT	EXTERIOR
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FL	FLOOR
FLA	FULL LOAD AMPS
FPC	FIRE PROTECTION CONTRACTOR
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FT	FEET OR FOOT
FTR	FIN TUBE RADIATOR
GA	GAGE/GAUGE
GAL	GALLON (-S)
GC	GENERAL CONTRACTOR
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
H	HUMIDITY
HORZ	HORIZONTAL
HP	HORSEPOWER OR HEAT PUMP)
HR	HOUR (-S)
HVAC	HEATING, VENTILATING, & AIR-CONDITIONING
Hz	HERTZ
HWP	HOT WATER PUMP
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
HX	HEAT EXCHANGER
ID	I (-DENTIFICATION, -NSIDE DIAMETER, -NSIDE DIMENSION)
IN	INCH (-ES)
INSUL	INSULAT (-ED, -ION)
KW	KILOWATT
kWh	KILWATT HOUR
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LWT	LEAVING WATER TEMPERATURE
MAX	MAXIMUM
MBH	BTU PER HOUR (THOUSANDS)
MC	MECHANICAL CONTRACTOR
MCA	MINIMUM CIRCUIT AMPS
MFR	MANUFACTURER
MIN	MIN (-IMUM, -UTE)
MISC	MISCELLANEOUS
MOCP	MAXIMUM OVERCURRENT PROTECTION [AMPS]
N/A	NOT APPLICABLE
NC	NOISE CRITERIA OR NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NPCW	NON-POTABLE COLD WATER
OA	OUTSIDE AIR
OD	OUTSIDE DI (-AMETER, -MENSION)
PC	PLUMBING CONTRACTOR
PD	PRESSURE DROP
PH	PHASE (ELECTRICAL)
PHE	PLATE HEAT EXCHANGER
PLBG	PLUMBING
PPM	PARTS PER MILLION
PRS	PRESSURE REDUCING STATION
PRV	PRESSURE REDUCING VALVE (STEAM, WATER, GAS)
PSF	POUND PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIG	PSI GAUGE
RFR	REFRIGERANT RETURN (SUCTION)
RFS	REFRIGERANT SUPPLY (LIQUID)
RH	RELATIVE HUMIDITY [%]
RLA	RUNNING LOAD AMPS
RPM	REVOLUTIONS PER MINUTE
RTU	ROOF TOP UNIT
SA	SUPPLY AIR
SD	SMOKE DAMPER
SP	STATIC PRESSURE
SQ FT	SQUARE FEET OR FOOT
SQ IN	SQUARE INCH OR INCHES
TAB	TESTING AND BALANCING
TBD	TO BE DETERMINED
TE	TOP ELEVATION
TEMP	TEMPERATURE
TOD	TOP OF DUCT
TOP	TOP OF PIPE
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
V	VOLT (-AGE, -S)
VFD	VARIABLE FREQUENCY DRIVE
W	WATT (-AGE, -S)
WB	WET BULB
WMS	WIRE MESH SCREEN
WPD	WATER PRESSURE DROP
ΔP	DIFFERENTIAL PRESSURE
ΔT	TEMPERATURE DIFFERENCE
℄	CENTERLINE

GENERAL SYMBOLS

TAGGED NOTE DESIGNATOR	#
REVISION TRIANGLE	A
ROOM TAG	ROOM NAME (SEE A1)
EQUIPMENT TAG	TYPE XXX-## / INSTANCE ####
AIR DEVICE TAG (REGISTER, GRILLE, DIFFUSER,LOUVER)	TAG X.XX / AIRFLOW XXXX
POINT OF CONNECTION / CONNECT TO EXISTING	
POINT OF DEMOLITION	

HVAC LEGEND

SUPPLY AIR DIFFUSER	
RETURN AIR DIFFUSER	
EXHAUST AIR DIFFUSER	
TRANSFER AIR DIFFUSER W/ SOUND ATTENUATING BOOT	
SIDEWALL DIFFUSER/GRILLE	
PUMP	
CENTRIFUGAL FAN	
RECTANGULAR DUCT	##x##
ROUND/SPIRAL DUCT	#ø
FLAT OVAL DUCT	##/##
SUPPLY AIR DUCT	SA
RETURN AIR DUCT	RA
EXHAUST AIR DUCT	EA
OUTSIDE AIR DUCT	OA
TRANSFER AIR DUCT	TA
COMBUSTION AIR EXHAUST DUCT	CAE
COMBUSTION AIR INTAKE DUCT	CAI
SA AIR DUCT TURNING UP	SA
SA AIR DUCT TURNING DOWN	SA
RA AIR DUCT TURNING UP	RA
RA AIR DUCT TURNING DOWN	RA
EA AIR DUCT TURNING UP	EA
EA AIR DUCT TURNING DOWN	EA
EXISTING DUCT - (XXX) DENOTES SYSTEM	E(XXX)
DUCT TO BE DEMOLISHED - (XXX) DENOTES SYSTEM	(XXX)
MITERED ELBOW WITH TURNING VANES	
FLEXIBLE DUCT	
THERMOSTAT	T
TEMPERATURE SENSOR	T
HUMIDITY SENSOR	H
CARBON DIOXIDE SENSOR	C
TEMPERATURE & CARBON DIOXIDE SENSOR	TC
DUCT SMOKE DETECTOR	SD
AUTOMATIC BALANCING (ABD) / VOLUME DAMPER (VD)	VERT. HORIZ.
MOTORIZED DAMPER	VERT. HORIZ.
FIRE DAMPER	VERT. HORIZ.
SMOKE DAMPER	VERT. HORIZ.
COMBINATION FIRE & SMOKE DAMPER	VERT. HORIZ.

MECHANICAL PIPING LEGEND

PIPE ELBOW TURNING UP	
PIPE ELBOW TURNING DOWN	
PIPE TEE; CONNECTION ON TOP	
PIPE TEE; CONNECTION ON BOTTOM	
PIPE CAP	
BOILER FEEDWATER	BFW
CONDENSATE DRAIN	CD
CHILLED WATER SUPPLY/RETURN	CHWS/R
CONDENSER WATER SUPPLY/RETURN	CWS/R
DUAL TEMP. WATER SUPPLY/RETURN	DTS/R
GEOTHERMAL WATER SUPPLY/RETURN	GS/R
HIGH PRESSURE STEAM CONDENSATE	HPC
HIGH PRESSURE STEAM; (#) DENOTES PRESSURE	HPS(#)
HEAT PUMP WATER SUPPLY/RETURN	HPS/R
HEAT RECOVERY SUPPLY/RETURN PIPING	HRS/R
HEATING WATER SUPPLY/RETURN	HWS/R
LOW PRESSURE STEAM CONDENSATE	LPC
LOW PRESSURE STEAM; (#) DENOTES PRESSURE	LPS(#)
MEDIUM PRESSURE STEAM RETURN	MPC
MEDIUM PRESSURE STEAM; (#) DENOTES PRESSURE	MPS(#)
MAKEUP CITY WATER	MPCW
REFRIGERANT RETURN	RFR
REFRIGERANT SUPPLY	RFS
STEAM CONDENSATE PUMPED DISCHARGE	SPD
STEAM VENT PIPING	SVT
PIPING TO BE DEMOLISHED - (XXX) DENOTES SYSTEM	-(XXX)-
EXISTING PIPING - (XXX) DENOTES SYSTEM	E(XXX)
TWO-WAY CONTROL VALVE	
THREE-WAY CONTROL VALVE	
THREE-POSITION CONTROL VALVE	
TWO-POSITION CONTROL VALVE	
AUTOMATIC AIR VENT (AAV)	
MANUAL AIR VENT (MAV)	
MANUAL BALANCING VALVE (BV)	
BALL VALVE	
BUTTERFLY VALVE	
TRIPLE DUTY VALVE (TDV)	
STRAINER	
MANUAL ISOLATION VALVE	
GLOBE VALVE	
OS&Y (GATE) VALVE	
PRESSURE REDUCING VALVE (STEAM, GAS, WATER, ETC.)	
AUTO-FLOW CONTROL VALVE	
CHECK VALVE	
FLEXIBLE PIPE CONNECTION	
FLOW METER (VENTURI)	
PIPING UNION	
FLOW SWITCH	
THERMOMETER	
PETE'S PLUG; TEMPERATURE/PRESSURE PORT	

SHEET LIST - MECHANICAL

SHEET #	SHEET NAME
M-100	MECHANICAL BASEMENT DEMOLITION PLAN
M-101	MECHANICAL FIRST FLOOR DEMOLITION PLAN
M-200	MECHANICAL BASEMENT NEW WORK PLAN
M-201	MECHANICAL FIRST FLOOR NEW WORK PLAN
M-202	MECHANICAL SECOND FLOOR NEW WORK PLAN
M-203	MECHANICAL THIRD FLOOR NEW WORK PLAN
M-204	MECHANICAL ATTIC NEW WORK PLAN
M-300	MECHANICAL DETAILS
M-301	MECHANICAL DETAILS
M-400	MECHANICAL SCHEDULES
M-001	MECHANICAL LEGEND
M-002	MECHANICAL SPECIFICATIONS

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PROJECT

OLD EVERETT HIGH SCHOOL - TASK 5

548 Broadway, Everett, MA 02149

CLIENT

CITY OF EVERETT, MA

CONSULTANTS

REGISTRATION

Issue Date

KEYPLAN

ISSUE / REVISION

#	Date	Description

NOT FOR CONSTRUCTION

PROJECT NUMBER

BEMS26

SHEET TITLE

MECHANICAL LEGEND

SHEET NUMBER

M-001

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DIVISION 23: MECHANICAL SPECIFICATIONS

PART 1 - GENERAL

1.01 GENERAL

A. THE LATEST EDITION OF AIA DOCUMENTS A201 GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, OR AS REQUIRED BY THE ARCHITECTURAL DOCUMENTS AND/OR THE STRUCTURAL ENGINEERS DOCUMENTS ARE PART OF THE CONTRACT.

B. BIDDERS SHALL VISIT AND CAREFULLY EXAMINE THE AREA AFFECTED BY THIS WORK TO FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AND THE DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THIS WORK BEFORE SUBMITTING PROPOSALS. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT, OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ENGINEERS ATTENTION PRIOR TO BID. IF DISCREPANCIES ARE NOT RESOLVED TO CONTRACTORS SATISFACTION THEY SHALL BE QUALIFIED IN THEIR BID SUBMISSION.

C. THIS CONTRACTOR SHALL REVIEW ALL CONSTRUCTION DOCUMENTS ASSOCIATED WITH THIS PROJECT INCLUDING GENERAL CONSTRUCTION, DEMOLITION, ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING AND SPRINKLER PLANS AND SPECIFICATIONS. ALL WORK REQUIRED IN THE BID WHICH IS INDICATED OR IMPLIED TO BE PERFORMED BY THIS TRADE IN OTHER SECTIONS OF THE WORK SHALL BE INCLUDED IN THEIR BID. IF A CONFLICT OCCURS IN THE BID SPECIFICATIONS AND/OR ON THE DRAWINGS, THE MORE STRINGENT SITUATION SHALL APPLY.

D. COORDINATE ALL WORK OF THE SECTION WITH EXISTING CONDITIONS AND THE WORK OF OTHER TRADES. THE CONTRACTOR SHALL THOROUGHLY ACQUAINT HIMSELF WITH THE WORK INVOLVED AND SHALL VERIFY AT THE BUILDING ALL MEASUREMENTS NECESSARY FOR THE PROPER INSTALLATION OF THE WORK, OBTAINING THE SAME WHEN NECESSARY FROM THE OTHER CONTRACTORS AND SECTIONS. CONTRACTOR SHALL ALSO BE PREPARED TO PROMPTLY FURNISH TO OTHER CONTRACTORS ANY INFORMATION RELATING TO THE WORK OF THIS SECTION NECESSARY FOR THE PROPER INSTALLATION OF OTHER CONTRACTS AND SHALL COOPERATE TO SECURE THE BEST PROGRESS OF, AND HARMONY BETWEEN, THE WORK OF THE DIFFERENT CONTRACTS AND SECTIONS IN THE INTERESTS OF THE INSTALLATION AS A WHOLE. CONFER WITH OTHER CONTRACTORS AND ENGINEER FOR ADJACENT WORK TO THIS SECTION AND ARRANGE TO HAVE VISIBLE PORTIONS OF WORK FIT AND HARMONIZE IN A MANNER SATISFACTORY TO THE OWNER'S REPRESENTATIVE.

E. THE SPECIFICATIONS ARE ACCOMPANIED BY DRAWINGS INDICATING THE GENERAL LOCATION OF EQUIPMENT AND CONNECTIONS THERETO. UNLESS SPECIFICALLY DIMENSIONED, LOCATIONS OF EQUIPMENT AND ROUTINGS ARE APPROXIMATE. SCALES ON DRAWINGS ARE INDICATED FOR BIDDING PURPOSES ONLY. DRAWINGS SHALL NOT BE SCALED FOR CONSTRUCTION AND MANUFACTURING DETAILS. CERTAIN SYSTEMS ARE DIAGRAMMATIC AND GIVE THE GENERAL ARRANGEMENT ONLY. NO ADDED COMPENSATION WILL BE PERMITTED FOR VARIATIONS DUE TO FIELD CONDITIONS. EXACT LOCATIONS AND ARRANGEMENTS SHALL BE DETERMINED IN THE FIELD ON THE BASIS OF DETAILS INDICATED ON APPROVED SHOP DRAWINGS, AND SUPPLEMENTARY INFORMATION ISSUED BY THE ENGINEER, AND SHALL PROVIDE FOR OPERATING EFFICIENCY, NEATNESS OF APPEARANCE, AND EASE OF MAINTENANCE.

F. GUARANTEE: THE CONTRACTOR SHALL GUARANTEE AND SERVICE THE ENTIRE INSTALLATION FOR A PERIOD OF ONE YEAR FROM THE DATE OF THE FINAL ACCEPTANCE OF THE INSTALLATION. THE CONTRACTOR SHALL, DURING THE PERIOD OF THE GUARANTEE, REPLACE OR REPAIR AT HIS OWN EXPENSE ANY PIECE OF EQUIPMENT AND/OR MATERIAL WHICH IS FOUND TO BE DEFECTIVE. THE REPLACEMENT OR REPAIR SHALL BE PERFORMED THE SAME DAY OF NOTIFICATION IN AN EMERGENCY FASHION WHEN NOTIFIED BY THE OWNER OR AUTHORIZED REPRESENTATIVE. THE CONTRACTOR SHALL ALSO REPAIR ALL DAMAGE TO SURROUNDING WORK CAUSED BY THE FAILURE, REPAIR OR REPLACEMENT OF DEFECTIVE EQUIPMENT. ALL REFRIGERATION COMPRESSORS SHALL HAVE A FACTORY GUARANTEE INCLUDING PARTS AND LABOR FOR FIVE YEARS TOTAL. THE FINAL ACCEPTANCE WILL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, BALANCED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATION, AND HAS FURNISHED ALL THE REQUIRED CERTIFICATES OF INSPECTION AND APPROVALS.

G. EQUIPMENT AND MATERIALS: MOST ITEMS OF MECHANICAL AND ELECTRICAL EQUIPMENT AND MATERIAL ARE NOTED ON THE DRAWINGS OR IN THE SPECIFICATIONS WITH A MANUFACTURER'S NAME AND CATALOG NUMBER. THIS DESIGNATION IS USED TO SET THE STANDARD FOR CONSTRUCTION, PERFORMANCE, OPERATION AND APPEARANCE. PRODUCTS OF OTHER MANUFACTURERS WILL BE CONSIDERED AND RULED UPON BY THE ENGINEER. THE SUBMISSION OF A SUBSTITUTION IMPLIES THAT THE ITEM HAS ALL NECESSARY UNDERWRITERS' LABORATORIES, BOARD OF STANDARDS AND APPEALS, NATIONAL ELECTRICAL CODE, ETC. APPROVALS. SHOULD THE ITEM BE FOUND NOT TO HAVE SUCH APPROVAL, IT SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER

H. SUBSTITUTIONS: DEVIATIONS FROM CONTRACT DOCUMENTS AND SUBSTITUTION OF MATERIALS OR EQUIPMENT FOR THOSE SPECIFIED SHALL BE REQUESTED INDIVIDUALLY IN WRITING. FURNISH INFORMATION AS REQUIRED TO DEMONSTRATE THAT THE ARTICLE, MATERIAL, APPARATUS, PRODUCT OR PROCESS TO BE USED IS ADEQUATELY COMPARABLE TO THAT SPECIFIED IN QUALITY, FINISH, DESIGN, EFFICIENCY, DURABILITY AND GENERAL APPEARANCE, AND HAS BEEN ELSEWHERE DEMONSTRATED TO BE SERVICEABLE FOR THE PURPOSES FOR WHICH IT IS INTENDED. IF TESTS OR DEMONSTRATIONS ARE REQUIRED BY THE OWNER'S REPRESENTATIVES, THE COST OF SUCH TESTS OR DEMONSTRATIONS SHALL BE BORNE BY THE CONTRACTOR. DESCRIBE REASON FOR CHANGE, CONNECTIONS TO ADJACENT MATERIALS, ELECTRICAL SERVICES, SERVICE ACCESS REQUIREMENTS, DIFFERENCES IN OPERATING CHARACTERISTICS OR CYCLES AND ALL OTHER POINTS OF DEVIATION. CONTRACTOR TO ASSUME FULL RESPONSIBILITY FOR SAFETY, COORDINATION WITH OTHER TRADES, OPERATION AND PERFORMANCE OF ALTERED SYSTEM.

I. IS CONTRACTOR IS TO OBTAIN A COPY OF THE BUILDING RULES AND REGULATIONS PRIOR TO BID SUBMISSION. ALL WORK MUST BE INSTALLED IN ACCORDANCE WITH THE BUILDING RULES AND REGULATIONS. DETERMINE REQUIREMENTS AND THE EXTENT OF PREMIUM TIME WORK REQUIRED BY BUILDING, FOR THE PURPOSE OF THE BID ASSUME ANY NOISY WORK (E.G., CHOPPING, CORE DRILLING, WELDING, BRAZING, SOLDERING, ETC.) AND BASE BUILDING SYSTEMS INTERRUPTIONS ARE TO BE PERFORMED OUTSIDE NORMAL BUSINESS HOURS.

J. REMOVAL, TEMPORARY CONNECTIONS AND RELOCATION OF CERTAIN EXISTING WORK WILL BE NECESSARY FOR THE INSTALLATION OF THE NEW SYSTEMS. ALL EXISTING CONDITIONS ARE NOT COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND MAKE ALL NECESSARY CHANGES REQUIRED BASED ON EXISTING CONDITIONS FOR PROPER INSTALLATION OF NEW WORK.

K. ALL NECESSARY CUTTING AND PATCHING IN FLOOR SLABS, ROOF SLABS, WALLS, AND CEILINGS FOR THE HVAC WORK SHALL BE PERFORMED BY THIS CONTRACTOR. RESTORE TO MATCH EXISTING CONDITIONS.

L. WHERE PIPE AND/OR DUCTWORK PENETRATE RATED WALLS, THE SPACE BETWEEN THE INSULATION AND THE WALL SHALL BE CAULKED WITH NON-COMBUSTIBLE MATERIAL IN AN APPROVED MANNER. ALL PIPING AND/OR DUCTWORK TO BE INSTALLED ABOVE HUNG CEILING UNLESS OTHERWISE NOTED ON DRAWINGS. THE CONTRACTOR SHALL COORDINATE WITH ARCHITECTURAL DRAWINGS FOR ALL CEILING ELEVATIONS.

M. ACCESS DOORS IN FINISHED CONSTRUCTION: THE CONTRACTOR SHALL PREPARE A LIST OF ALL ACCESS DOORS (MINIMUM 18"X18") REQUIRED FOR OPERATION AND MAINTENANCE OF ALL CONCEALED EQUIPMENT AND OTHER DEVICES, WHICH SHALL BE SUPPLIED TO THE GENERAL CONTRACTOR FOR INSTALLATION. THE COST TO FURNISH AND INSTALL ACCESS DOORS SHALL BE INCLUDED IN THIS CONTRACTORS BID. THIS CONTRACTOR IN ADVANCE OF CEILING INSTALLATIONS SHALL SUITABLY FIELD TAG AND IDENTIFY ALL CONCEALED EQUIPMENT, VALVES, DAMPERS, ETC., WHICH REQUIRE ACCESS DOOR PROVISIONS.

N. NEW DUCTWORK SHALL ARRIVE ON THE CONSTRUCTION SITE SEALED AND REMAIN PROTECTED FROM DEBRIS THROUGHOUT CONSTRUCTION PRIOR TO FINAL INSTALLATION. AIR DISTRIBUTION ACCESSORIES AND INTERNAL COMPONENTS OF ALL HVAC EQUIPMENT SHALL BE SEALED AND PROTECTED FROM DEBRIS WHILE ON THE CONSTRUCTION SITE PRIOR TO FINAL CONNECTION AND START-UP.

O. ALL VOLATILE ORGANIC COMPOUND (VOC) LIMITS OF ADHESIVES, SEALANTS AND SEALANT PRIMERS MUST COMPLY WITH SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD) RULE #1168, AMENDMENT DATE OF JANUARY 7, 2005.

1.02 SCOPE OF WORK

A. THE CONTRACTOR SHALL FURNISH AND INSTALL AN HVAC SYSTEM COMPLETE WITH ALL EQUIPMENT, DUCTWORK, PIPING, INSULATION, CONTROLS, ACCESSORIES AND ASSOCIATED WORK IN ACCORDANCE WITH THE MASSACHUSETTS BUILDING CODE, ALL NATIONAL, STATE AND LOCAL AUTHORITIES HAVING JURISDICTION, BUILDING MANAGEMENT, DESIGN DRAWINGS AND THIS SPECIFICATION.

B. THE WORK SHALL INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, HOISTING AND RIGGING, BREAKDOWN AND SETUP OF EQUIPMENT FOR INSTALLATION, SCAFFOLDING, AND SERVICES TO COMPLETE THE SYSTEM AND PROVIDE THE OWNER WITH A FULLY OPERATIONAL SYSTEM. ANY EQUIPMENT, PARTS, MATERIALS, ACCESSORIES, OR LABOR THAT IS NECESSARY FOR PROPER PERFORMANCE OF THE MECHANICAL WORK ALTHOUGH NOT SPECIFICALLY MENTIONED HEREIN OR SHOWN ON THE DRAWINGS, SHALL BE FURNISHED AND INSTALLED WITHOUT ADDITIONAL COSTS. WHEN INSTALLATION OF A PART OF ANY SYSTEM (PLUMBING, HEATING, AIR CONDITIONING, ELECTRICAL OR OTHERWISE) REQUIRES A SHUTDOWN OF ANY OPERATING SYSTEM, CONNECT THE PARTIAL SYSTEM ONLY AFTER NOTIFICATION TO AND WITH APPROVAL OF THE OWNER. COORDINATE ACTIVITIES CLOSELY WITH THOSE OF SUBCONTRACTOR'S SO THE OPERATION IS RESTRICTED TO AS SHORT AN INTERVAL AS POSSIBLE AND "OUT OF SERVICE" TIME OF THESE FACILITIES IS KEPT TO A MINIMUM. ANY SHUTDOWN OF THE ELECTRICAL SYSTEM WILL BE DONE OUT OF HOURS AS APPROVED BY OWNER.

C. IT IS IMPERATIVE THAT EXISTING SYSTEMS BE MAINTAINED IN CONTINUOUS OPERATION DURING THE COURSE OF CONSTRUCTION; IF SHUTDOWNS ARE REQUIRED TO PERMIT THE DISCONNECTION AND REMOVAL OR RECONNECTION OF EXISTING WORK, OR FINAL CONNECTION TO BE MADE TO AN EXISTING SYSTEM, THEY SHALL OCCUR ONLY DURING OFF-HOURS AND ONLY AFTER PROPER PERMISSION HAS BEEN OBTAINED FROM BUILDING MANAGEMENT.

D. THE BUILDING MANAGEMENT REQUIRES NOT LESS THAN SEVEN DAYS NOTICE FOR SHUTDOWN OF ANY BUILDING SYSTEM.

E. MAKE AN ACCURATE TAKE-OFF ALL EXISTING EQUIPMENT, DUCTWORK, PIPING, CONDUIT, PANELBOARDS, WIRING DEVICES, AND OTHER ACCESSORIES BEING REMOVED DURING DEMOLITION AND INCLUDE THE COST FOR DISCONNECTING AND REMOVAL OF STATED EQUIPMENT, ETC. INTO THE BASE BID. REMOVALS SHALL BE AS SPECIFIED AND/OR AS INDICATED ON THE DRAWINGS. IN CERTAIN CASES, EQUIPMENT OR MATERIALS DESIGNATED FOR REMOVAL SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL BE TURNED OVER AT LOCATIONS IN THE BUILDING AS DIRECTED BY THE OWNER.

F. PLAN INSTALLATION OF NEW WORK AND CONNECTIONS TO EXISTING WORK TO INSURE MINIMUM INTERFERENCE WITH REGULAR OPERATION OF EXISTING FACILITIES. ALL SYSTEM SHUTDOWNS AFFECTING OTHER AREAS SHALL BE COORDINATED WITH BUILDING MANAGEMENT.

G. SECURE ALL REQUIRED PERMITS AND APPROVALS AND TRANSMIT SAME TO THE OWNER. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FEES.

1.03 SHOP DRAWINGS, EQUIPMENT SUBMISSION, MAINTENANCE MANUALS

A. SUBMIT ONE (1) REPRODUCIBLE AND ONE (1) PRINT OF THE SHEET METAL AND PIPING SHOP DRAWINGS, 3/8" SCALE, CERTIFIED BY ALL TRADES THAT COORDINATION HAS BEEN ESTABLISHED.

B. SUBMIT THREE (3) COPIES OF ALL SHEET METAL AND PIPING SHOP STANDARDS LEAKAGE TEST CERTIFICATION, AIR AND WATER BALANCING REPORTS, AND CERTIFIED EQUIPMENT CUTS WITH CONSTRUCTION WIRING DIAGRAMS, AND AUTOMATIC TEMPERATURE CONTROL SHOP DRAWINGS INCLUDING CONTROL AND POWER WIRING DIAGRAMS, SEQUENCE OF OPERATIONS AND ALL CUTS OF EQUIPMENT AND DEVICES.

C. SUBMIT FOUR (4) BOOK BOUND OPERATING AND SERVICE MANUALS WHICH SHALL INCLUDE COPIES OF ALL AS-BUILT SHOP DRAWINGS FOLDED AND PLACED INTO BINDER POCKETS, AS-BUILT DRAWINGS IN ELECTRONIC FORMAT, COPIES OF REVIEWED EQUIPMENT CUTS FOR INSTALLED EQUIPMENT, COPIES OF EQUIPMENT START UP CHECKLISTS, AIR AND WATER BALANCING REPORTS, LEAK TESTS, HYDROSTATIC TESTS, WATER TREATMENT AND CHEMICAL CLEANING CERTIFICATION. CONTRACTOR SHALL INSTRUCT OWNERS PERSONNEL ON THE OPERATION OF ALL HVAC SYSTEMS.

D. CONFLICTS NOT SPECIFICALLY FLAGGED ON SHOP DRAWINGS FOR COORDINATION BETWEEN TRADES OR FROM PRE-EXISTING CONDITIONS UNCOVERED DURING DEMOLITION ARE ASSUMED TO BE COORDINATED TO ALLOW FOR THE INSTALLATION OF THE DESIGN INTENT ON THE MEP/ARCHITECTURAL DRAWINGS. ALL ITEMS UNFLAGGED AND FOUND IN THE FIELD SHALL BE THE CONTRACTORS RESPONSIBILITY TO COORDINATE TO MAINTAIN THE DESIGN INTENT. ALL CHANGES SHALL BE DOCUMENTED IN THE AS-BUILT CONDITIONS.

E. AS WORK PROGRESSES AND FOR DURATION OF CONTRACTOR, MAINTAIN COMPLETE AND SEPARATE SET OF PRINTS OF CONTRACT DRAWINGS AT THE JOB SITE. RECORD WORK COMPLETED AND ALL CHANGES FROM ORIGINAL CONTRACT DRAWINGS CLEARLY AND ACCURATELY INCLUDING WORK INSTALLED AS A MODIFICATION OR ADDITION TO THE ORIGINAL DESIGN. RECORD VALVE TAGS AS THEY ARE INSTALLED. FINAL SUBMISSION OF REPRODUCIBLE AS-BUILT DRAWINGS ARE TO BE SIGNED AND CERTIFIED BY INSTALLING CONTRACTOR THAT THIS IS THE AS-BUILT CONDITION OF THE WORK. AS-BUILT SHOP DRAWINGS SHALL BE SUBMITTED IN DRAWING AND ELECTRONIC FORMAT (AUTOCAD 2007 MINIMUM).

PART 2 - PRODUCTS/APPLICATION

2.01 DUCTWORK

A. PROVIDE ALL SUPPLY, RETURN, EXHAUST, AND OUTSIDE AIR SHEET METAL DUCTWORK, FITTINGS, DAMPERS, TURNING VANES, ACCESS DOORS, PLENUMS, FLEXIBLE CONNECTIONS, AND SUPPORTS AND PERFORM LEAK TEST PER LATEST SMACNA STANDARDS AND NFPA90A. ALL DUCTWORK JOINTS SHALL BE SEALED AIR TIGHT WITH APPROVED DUCT SEALANT, SIMILAR TO 3M-540.

B. ALL LOW PRESSURE DUCTS EXPOSED IN OCCUPIED AREAS, OTHER THAN MECHANICAL AND FAN ROOMS FABRICATED WITH HEMMED "S" SLIPS. REINFORCE JOINTS OF DUCTS OVER 30" WIDE WITH FLAT BARS OR FLAT BARS AND 3/8" RODS FOR DUCTS OVER 54" WIDE. TOP JOINT WITH BAR SKIP UNDER 31" WIDTH AND REINFORCED BAR SKIP FOR 31" AND LARGER IN WIDTH.

C. ROUND DUCTS SPIRAL LOCK. G.I. COMPANY, SHEET METAL PRODUCTS, UNITED SHEET METAL, PACIFIC AIR PRODUCTS, OR AS APPROVED. ROUND DUCTS OVER 60" WITH BUTT WELDED, LONGITUDINAL SEAMS, AND FLANGE JOINTS.

D. FITTINGS IN ROUND DUCTS SHALL BE NO LIGHTER THAN 20 GAUGE, AND WELDED. G. 1. COMPANY, SHEET METAL PRODUCTS, UNITS SHEET METAL, PACIFIC AIR PRODUCTS, OR AS APPROVED. BRANCH TEE TAKE-OFFS MADE WITH "CON-T" TYPE CONICAL TEE FITTINGS. WHERE MAIN DUCT REDUCES IN SIZE AFTER TAKE-OFF, USE "CON-T" OR TURNS, AND 3-PIECE FOR 45 DEGREE TURNS.

E. CONTRACTOR SHALL ADHERE TO THE FULL INSIDE CROSS SECTIONAL DUCTWORK AREAS SHOWN ON THE DRAWINGS AND PROVIDE ALL TRANSITIONS AND OFFSETS AS REQUIRED TO MEET FIELD CONDITIONS, ACCOMMODATE EQUIPMENT MAINTENANCE REQUIREMENTS AND COORDINATE WITH ALL TRADES. ALL FIELD CONDITIONS WHICH REQUIRE MODIFIED TRANSITIONS WILL NOT BE APPROVED WITHOUT PRIOR ENGINEER APPROVAL THROUGH SHOP DRAWING OR RFI.

F. FOR DUCTS WITH ACOUSTICAL LINING THE SIZES SHOWN ON THE PLAN SHALL BE THE CLEAR INSIDE DIMENSIONS.

G. ALL OPEN-ENDED RETURN, TRANSFER OR EXHAUST DUCTS SHALL BE PROVIDED WITH WIRE MESH SCREENS.

H. ANY OPEN-ENDED DUCT ON EQUIPMENT OR THROUGH A RATED PARTITION THAT REQUIRES SMOKE DETECTION AS PER THE MECHANICAL CODE SHALL INCLUDE AN EXTENSION OF A MINIMUM THREE (3) FEET STRAIGHT SECTION TO ALLOW FOR INSTALLATION OF DUCT-MOUNTED SMOKE DETECTOR.

I. DUCTWORK TO BE INSTALLED AT THE HIGHEST LOCATION POSSIBLE UNLESS A CONFLICT PREVENTS THIS OR THE INSTALLATION HIGH WOULD IMPEDE ACCESS TO EQUIPMENT CONNECTED TO THE DUCTWORK.

J. EXISTING DUCTWORK TO BE REUSED: CONTRACTOR SHALL INSPECT, SEAL AS PER PRESSURE CLASSIFICATION, LEAK TEST, AND INSULATE ALL EXISTING DUCTWORK TO BE REUSED. ALL REQUIRED WORK SHALL BE PART OF BID.

K. EXISTING DUCTWORK CLEANING

1. CLEAN ALL EXISTING SUPPLY, RETURN, AND EXHAUST DUCTWORK INDICATED TO REMAIN AND BE REUSED AS PART OF THIS PROJECT.
2. CLEANING SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL AIR DUCT CLEANERS ASSOCIATION (NADCA) ACR STANDARD.
3. CONTRACTOR SHALL FIELD VERIFY EXTENT OF EXISTING DUCTWORK TO BE CLEANED AND SHALL INCLUDE ALL LABOR, EQUIPMENT, ACCESS PANELS, CONTAINMENT, AND INCIDENTAL MATERIALS REQUIRED TO COMPLETE THE WORK.
4. CLEANING SHALL INCLUDE ALL ACCESSIBLE MAIN DUCTS, BRANCH DUCTS, TRANSITIONS, ELBOWS, SPLITTERS, TURNING VANES, VOLUME DAMPERS, FIRE DAMPERS, SMOKE DAMPERS, GRILLES, REGISTERS, DIFFUSERS, AND PLENUMS SERVING THE SYSTEM.
5. PRIOR TO CLEANING OPERATIONS, CONTRACTOR SHALL PROTECT ALL OCCUPIED SPACES, EQUIPMENT, FINISHES, FURNISHINGS, AND BUILDING CONTENTS FROM DUST AND DEBRIS GENERATED BY THE CLEANING PROCESS.
6. DUCT SYSTEMS SHALL BE MAINTAINED UNDER CONTINUOUS NEGATIVE PRESSURE DURING CLEANING OPERATIONS UTILIZING HEPA-FILTERED VACUUM COLLECTION EQUIPMENT.
7. MECHANICAL AGITATION DEVICES INCLUDING AIR WHIPS, AIR NOZZLES, BRUSHES, OR OTHER NADCA-ACCEPTED METHODS SHALL BE UTILIZED TO DISLODGE ACCUMULATED DUST, DEBRIS, INSULATION FIBERS, AND FOREIGN MATERIAL FROM DUCT INTERIOR SURFACES.
8. ALL SUPPLY, RETURN, AND EXHAUST AIR DEVICES SHALL BE REMOVED, CLEANED, AND REINSTALLED. DAMAGED DEVICES SHALL BE REPORTED TO THE ENGINEER.
9. CLEAN ALL ACCESSIBLE AHU, RTU, AND FAN SECTION COMPONENTS CONNECTED TO DUCTWORK BEING CLEANED INCLUDING FAN HOUSINGS, COIL FACES, FILTER SECTIONS, DRAIN PANS, MIXING BOXES, AND PLENUMS.
10. PROVIDE ALL TEMPORARY ACCESS OPENINGS REQUIRED TO PERFORM CLEANING. ACCESS OPENINGS SHALL BE SEALED AND REPAIRED IN ACCORDANCE WITH SMACNA STANDARDS UPON COMPLETION OF THE WORK.
11. CONTRACTOR SHALL NOT UTILIZE CHEMICAL CLEANERS, ENCAPSULANTS, SEALANTS, DEODORIZERS, OR BIOCIDES WITHOUT SPECIFIC WRITTEN APPROVAL OF THE ENGINEER AND OWNER.
12. EXISTING DUCTWORK FOUND TO HAVE EXCESSIVE CORROSION, WATER DAMAGE, DETERIORATED INTERNAL INSULATION, LOOSE LINER, SIGNIFICANT AIR LEAKAGE, OR OTHER CONDITIONS IMPACTING SERVICEABILITY SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
13. CLEANING OF DETERIORATED DUCTWORK SHALL NOT CONSTITUTE ACCEPTANCE OF EXISTING CONDITIONS. ENGINEER MAY DIRECT REPAIR OR REPLACEMENT OF DEFICIENT DUCTWORK DISCOVERED DURING CLEANING OPERATIONS.
14. UPON COMPLETION OF CLEANING, INTERIOR DUCT SURFACES SHALL BE VISIBLY CLEAN AND FREE OF DUST, DEBRIS, LOOSE PARTICULATE MATTER, AND FOREIGN MATERIAL.
15. CONTRACTOR SHALL PROVIDE A WRITTEN CERTIFICATION THAT CLEANING WAS COMPLETED IN ACCORDANCE WITH NADCA REQUIREMENTS.
16. PROVIDE BEFORE-AND-AFTER PHOTOGRAPHS OF REPRESENTATIVE DUCT SECTIONS, MAIN TRUNKS, AND AIR HANDLING UNIT CONNECTIONS FOR REVIEW BY THE ENGINEER.
17. ANY DAMAGE TO EXISTING HVAC EQUIPMENT, DUCTWORK, CEILINGS, WALLS, OR BUILDING FINISHES RESULTING FROM CLEANING OPERATIONS SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
18. COORDINATE CLEANING ACTIVITIES WITH OWNER TO MINIMIZE DISRUPTION TO BUILDING OPERATIONS. PROVIDE AFTER-HOURS OR PHASED WORK AS REQUIRED.
19. FINAL ACCEPTANCE OF DUCT CLEANING WORK SHALL BE SUBJECT TO REVIEW BY THE OWNER AND ENGINEER.
20. EXISTING DUCTWORK IS BELIEVED TO BE OF ADVANCED AGE. IF CLEANING REVEALS DUCTWORK THAT IS STRUCTURALLY UNSOUND OR UNSUITABLE FOR CONTINUED SERVICE, NOTIFY THE ENGINEER PRIOR TO PROCEEDING WITH ADDITIONAL WORK.

L. NEW DUCTWORK CLEANING

1. ALL NEW DUCTWORK INSTALLED UNDER THIS PROJECT SHALL BE THOROUGHLY WIPED CLEAN AS THE DUCTWORK IS ASSEMBLED TO MINIMIZE PRODUCTION OF DUST AND DIRT AT START-UP OF SYSTEMS.
2. ALL DUCTWORK MUST BE CAPPED AND SEALED THROUGHOUT CONSTRUCTION TO KEEP FREE FROM DUST/DEBRIS.

M. NEW DUCTWORK PRESSURE TESTING

1. ALL MEDIUM AND HIGH PRESSURE DUCT SYSTEMS (POSITIVE OR NEGATIVE) SHALL BE PRESSURE TESTED ACCORDING TO SMACNA TEST PROCEDURES (HVAC AIR DUCT LEAKAGE TEST MANUAL). NOTIFY OWNER MINIMUM SEVEN (7) CALENDAR DAYS IN ADVANCE OF LEAKAGE TESTING.
2. 25% OF LOW PRESSURE DUCTWORK SHALL BE TESTED.
3. ALL HIGH PRESSURE DUCTWORK DESIGNED FOR 3" W.G. AND GREATER SHALL OF AIR LEAKAGE RATE (CL) OF 6.0 OR LESS PER SMACNA REQUIREMENTS, PER MASS STATE BLDG. CODE, 9TH EDITION REQUIREMENTS AND IECC REQUIREMENTS SHALL BE TESTED. LEAK TESTING SHALL BE PER SMACNA HVAC AIR DUCT LEAKAGE TEST MANUAL.
4. THE CONTRACTOR SHALL BE REQUIRED TO WORK WITH THE OWNER'S ENGINEER TO DEVELOP A DUCT PRESSURE TESTING PROCEDURE FOR THE DUCTWORK THAT IS TO BE TESTED.
5. TESTING OF DUCTWORK SHALL OCCUR AFTER ALL DUCTWORK HAS BEEN CLEANED. PRIOR TO TESTING COMMENCING, REVIEW DUCTWORK SYSTEMS TO BE TESTED AND METHOD OF TESTING WITH OWNER'S ENGINEER.
6. IF ASSOCIATED DUCTWORK HAS BEEN USED FOR TEMPORARY OPERATION, REPLACE FILTERS PRIOR TO DUCT PRESSURE TESTING, AND SYSTEM TESTING/BALANCING.
7. THE CONTRACTOR SHALL NOTIFY THE OWNER AND OWNER'S ENGINEER PRIOR TO TESTING SO THAT TEST CAN BE WITNESSED AT OWNER'S AND OWNER'S ENGINEER OPTION.
8. TESTING REQUIREMENTS
   a. PRESSURE AND LEAK TEST ALL DESIGNATED DUCT PER SMACNA HVAC AIR DUCT LEAKAGE TEST MANUAL. FOR SUPPLY SYSTEMS, PERFORM POSITIVE PRESSURE TEST. FOR RETURN AND EXHAUST SYSTEMS ON SUCTION SIDE, PERFORM NEGATIVE PRESSURE TEST.
   b. DESIGN PRESSURE FOR TESTING DUCTWORK SHALL BE DETERMINED FROM THE MAXIMUM PRESSURE GENERATED BY THE FAN AT THE NOMINAL MOTOR HORSEPOWER SELECTED.
   c. TOTAL ALLOWABLE LEAKAGE SHALL NOT EXCEED 1 PERCENT OF THE TOTAL SYSTEM DESIGN AIRFLOW RATE.
   d. WHEN PARTIAL SECTIONS OF THE DUCT SYSTEM ARE TESTED, THE SUMMATION OF THE LEAKAGE FOR ALL SECTIONS SHALL NOT EXCEED THE TOTAL ALLOWABLE LEAKAGE.
   e. LEAKS IDENTIFIED DURING LEAKAGE TESTING SHALL BE REPAIRED BY:
      A. COMPLETE REMOVAL OF THE SEALING MATERIALS.
      B. THOROUGH CLEANING OF THE JOINT SURFACES.
      C. INSTALLATION OF MULTIPLE LAYERS OF SEALING MATERIALS.
   f. THE ENTIRE DUCTWORK SYSTEM SHALL BE TESTED, EXCLUDING CONNECTIONS UPSTREAM OF THE TERMINAL UNITS (I.E. DUCTWORK SHALL BE CAPPED IMMEDIATELY PRIOR TO THE TERMINAL UNITS, AND TESTED AS DESCRIBED ABOVE).
   g. AFTER TESTING HAS PROVEN THAT DUCTWORK IS INSTALLED AND PERFORMS AS SPECIFIED, THE TERMINAL UNITS SHALL BE CONNECTED TO DUCTWORK AND CONNECTIONS SEALED WITH EXTRA CARE.
   h. CONTRACTOR SHALL INFORM THE OWNER WHEN JOINTS MAY BE VISUALLY INSPECTED FOR VOIDS, SPLITS, OR IMPROPER SEALING OF THE JOINTS. IF ANY LEAKAGE EXISTS IN THE TERMINAL UNIT CONNECTIONS/JOINTS AFTER THE SYSTEMS HAVE BEEN PUT INTO SERVICE, LEAKS SHALL BE REPAIRED AS SPECIFIED FOR OTHER LEAKS.
   i. FIXED FLOW MEASUREMENT DEVICES (I.E. ORIFICE TUBES, NOZZLES, ETC.) SHALL HAVE CURRENT CALIBRATION DOCUMENTATION SHOWING THAT THE DEVICE WAS VERIFIED TO A NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST) STANDARD WITHIN THE PREVIOUS FIVE YEARS OR AS RECOMMENDED BY THE MANUFACTURER AND BE ACCURATE TO AT LEAST +/- 2% OF READING.
   j. PRESSURE MEASUREMENT INSTRUMENTATION (I.E. MANOMETER) SHALL HAVE CURRENT CALIBRATION DOCUMENTATION SHOWING THAT THE DEVICE WAS VERIFIED TO A NIST STANDARD WITHIN THE PREVIOUS YEAR OR AS RECOMMENDED BY THE MANUFACTURE. INSTRUMENTATION SHALL HAVE AN ACCURACY OF AT LEAST +/- 2% OF READING AND HAVE A RESOLUTION OF 2:1 WITH RESPECT TO THE MEASURED PRESSURE (I.E. RESOLUTION OF 0.01 MEASURED 0.1).
   k. ALL LOW-PRESSURE DUCT SYSTEMS (POSITIVE OR NEGATIVE) SHALL BE INSPECTED FOR VISIBLE AND AUDIBLE SIGNS OF LEAKAGE.
   l. LEAKS IDENTIFIED BY INSPECTION SHALL BE REPAIRED BY:
      A. COMPLETE REMOVAL OF THE SEALING MATERIALS.
      B. THOROUGH CLEANING OF THE JOINT SURFACES.
      C. INSTALLATION OF MULTIPLE LAYERS OF SEALING MATERIALS.
   m. DISCREPANCIES FOUND DURING TESTING AND BALANCING BETWEEN DUCT TRAVERSES AND DIFFUSER/GRILLE READINGS SHALL RESULT IN RE-INSPECTION, REPAIR AND RETEST UNTIL DISCREPANCIES ARE ELIMINATED.
9. AT THE OPTION OF THE OWNER, IF DOCUMENTED IN WRITING, CONTRACTOR MAY BE ALLOWED TO ELIMINATE TESTING OF TERMINAL UNITS BY CAPPING THE SUPPLY DUCTWORK PRIOR TO THE TERMINAL UNITS, THEN INSPECTING THE CONNECTION TO THE TERMINAL UNITS WHEN COMPLETE. THIS OPTION MAY ONLY BE EXERCISED BY THE OWNER, ONLY IF DOCUMENTED IN WRITING PRIOR TO TESTING.
10. DUCTWORK LEAKAGE TESTING AND/OR INSPECTION SHALL BE PERFORMED PRIOR TO INSTALLATION OF EXTERNAL DUCTWORK INSULATION.
11. PROVIDE ORIFICE ASSEMBLY INCLUDING STRAIGHTENING VANES, ORIFICE-PLATE MOUNTED IN STRAIGHT TUBE WITH PROPERLY LOCATED PRESSURE TAPS, AND U-TUBE MANOMETER OR OTHER DEVICE AS SPECIFIED BY SMACNA. ORIFICE ASSEMBLY SHALL BE CALIBRATED ACCURATELY AND SHALL COME WITH CALIBRATION CURVE.
12. FURNISH ALL REQUIRED BLANK OFF PLATES, BLIND FLANGES, SAFING, ETC. NECESSARY TO ISOLATE EACH SECTION OF DUCT BEING TESTED FOR LEAKAGE.
13. CORRECT ANY LEAKS FOUND DUE TO TESTING. DUCT SHALL NOT LEAK TO CAUSE AUDIBLE LEAKS OR BLOWING DETECTABLE BY HAND; LEAKAGE SHALL NOT BE AUDIBLE FROM ANY POINT IN DUCTWORK AT DISTANCE OF 3 FEET, AS DETERMINED BY ENGINEER. IF IN THE OPINION OF THE ENGINEER, THE DUCTWORK APPEARS TO HAVE EXCESSIVE LEAKAGE, THE DUCTWORK SHALL BE RE-SEALED AND RE-TESTED TO VERIFY DUCT INTEGRITY.

N. MATERIALS:

1. SHEETMETAL: HOT-DIPPED GALVANIZED SHEETMETAL WITH G90 COMMERCIAL COATING ACCORDING TO ASTM A653 & A924 FOR ALL DUCTWORK UNLESS OTHERWISE SPECIFIED.
2. STAINLESS STEEL: PROVIDE DUCTWORK OF STAINLESS STEEL CONSTRUCTION, WHERE INDICATED. DUCTWORK SHALL BE 316/NO.4 FINISH FOR OUTDOOR EXPOSED DUCT. 304/NO.1 FINISH FOR CONCEALED DUCTS. PROVIDE 316/NO.4 FINISH FOR ALL CORROSIVE EXHAUST SYSTEMS INCLUDING FUME HOODS AND DISHWASHER EXHAUST.
3. ALUMINUM: ALLOY 3003-H14, OF THICKNESS REQUIRED BY THE SMACNA DUCT CONSTRUCTION STANDARDS. PROVIDE FOR ALL DUCTWORK EXPOSED TO WEATHER AND MOISTURE INCLUDING OUTSIDE AIR DUCTS WITHIN 10 FEET OF LOUVERS AND TOILET ROOMS EQUIPPED WITH BATHS OR SHOWERS.
4. FLEXIBLE CONNECTIONS AT FANS SHALL BE NEOPRENE COATED, FLAME RETARDANT GLASS FABRIC (COMPLYING WITH NFPA 90), 30 OZ./SQ, YD. WITH SEWED AND CEMENTED SEAMS.
5. FLEXIBLE DUCTWORK: CONSTRUCTED OF A SUPPORTING HELIX OF COATED SPRING STEEL OR FORMED ALUMINUM; BONDED OR MECHANICALLY LOCKED TO A CORE LINER OF IMPREGNATED/COATED FIBERGLASS FABRIC OR LAMINATED FIBERGLASS-REINFORCED AND ALUMINIZED POLYESTER FILM. INSULATED FLEXIBLE DUCTWORK TO HAVE A MINIMUM INSULATIVE PROPERTY MATCHING THAT INDICATED IN THE INSULATION SPECIFICATION SECTION HEREIN. OUTER JACKET/VAPOR BARRIER TO BE AS A MINIMUM, FIBERGLASS-REINFORCED, ALUMINIZED POLYESTER FILM, WITH A MAXIMUM ASTM E96 PERMEANCE RATING OF 0.1 INCH PERM (GRAIN/H/FT2/IN. HG). DUCT TO HAVE A POSITIVE PRESSURE RATING OF 10 IN. W.G.

O. PROVIDE MANUAL BALANCING DAMPERS AS REQUIRED TO PROPERLY BALANCE THE AIR DISTRIBUTION SYSTEM AS SHOWN ON DRAWINGS AND AS LISTED BELOW:

1. ALL SUPPLY AIR MAIN BRANCHES FROM TRUNK, EACH SPLIT, AND ALL SUB-BRANCHES FROM MAINS SHALL HAVE BALANCING DAMPERS.
2. EXHAUST AND RETURN MAIN BRANCHES FROM TRUNK, EACH SPLIT AND ALL SUB-BRANCHES FROM MAINS SHALL HAVE BALANCING DAMPERS.
3. IF DAMPER IS NOT ACCESSIBLE, OR IS LOCATED ABOVE A PLASTER OR DRYWALL CEILING, PROVIDE A REMOTE DAMPER ACTUATOR AND DAMPER AS MANUFACTURED BY YOUNG REGULATOR MODEL 896-C WITH NO. 1200A RIGHT ANGLE WORM GEAR AND DAMPER MODEL 820 OR APPROVED EQUAL.

P. FIRE DAMPERS AND FIRE/SMOKE DAMPERS:

1. PROVIDE ALL FIRE DAMPERS, SMOKE DAMPERS, COMBINATION FIRE/SMOKE DAMPERS, SMOKE DETECTORS, AND ASSOCIATED CONTROLS AND ALARMS AS REQUIRED BY CODE.
2. DAMPERS SHALL BE DYNAMIC TYPE, U.L. LISTED AND LABELED, AND IN CONFORMANCE WITH NFPA.
3. FIRE DAMPER SHALL BE FUSIBLE LINK TYPE (165 DEGREE F.), TYPE B SHUTTER OUT OF THE AIR STREAM AS MANUFACTURED BY POTTORFF MODEL VFD-10 (1-1/2 HR RATED) OR MODEL VFD-30 (3HR RATED) AS REQUIRED OR APPROVED EQUAL.
4. COMBINATION FIRE/SMOKE DAMPERS SHALL BE CLASS II, REMOTE RESETTABLE, MULTI-BLADE TYPE WITH FIRESTAT OR HEAT SENSOR DEVICE AND 120-VOLT ACTUATOR MOUNTED OUT OF THE AIR STREAM, WITH DAMPER OPERATOR AND BLADE POSITION INDICATOR SWITCHES. PROVIDE MOTOR MOUNT BRACKET STRENGTHENER FOR DAMPERS OVER 10" IN HEIGHT. PROVIDE A 10 GAUGE WELDED VERTICAL STIFFENER AT EACH CORNER TO PREVENT DAMPER MISALIGNMENT.
5. COMBINATION FIRE/SMOKE DAMPERS SHALL BE MANUFACTURED BY POTTORFF MODEL FSD-142 (1-1/2 HR RATED) OR MODEL FSD-342 (3HR RATED) AS REQUIRED OR APPROVED EQUAL.
6. THE HVAC CONTRACTOR SHALL PROVIDE ALL DEVICES, RELAYS, END SWITCHES, E/P SWITCHES, CONTROL COMPONENTS, AIR PIPING, POWER WIRING, CONTROL WIRING AND INTERLOCK WIRING AS REQUIRED TO ACCOMPLISH THE SEQUENCE OF OPERATION FOR THESE DAMPERS.
7. DUCTWORK SHALL BE TRANSITIONED LARGER AT ALL FIRE AND FIRE/SMOKE DAMPERS SUCH THAT THE NET FREE AREA OF THE DUCTWORK IS NOT COMPROMISED.
8. CONTRACTOR SHALL PROVIDE A 16"X16" ACCESS DOOR IN THE DUCTWORK FOR ACCESS TO INTERNAL COMPONENTS OF THE DAMPER. THE DUCT ACCESS DOOR SHALL BE SIZED AS REQUIRED TO MAINTAIN SERVICE ACCESS TO THE DAMPERS INTERNAL COMPONENTS.

Q. PROTECTION PANS AND DRIP PANS:

1. PROVIDE PROTECTION PANS UNDER NEW CEILING MOUNTED AIR CONDITIONING UNITS, PIPES PASSING THROUGH SWITCHGEAR ROOMS OR OVER ELECTRIC EQUIPMENT. THE PANS SHALL BE CONSTRUCTED OF GALVANIZED STEEL, SUITABLE REINFORCEMENT TO PREVENT SAGGING.
2. EDGES OF THE PANS SHALL TURN UP 2" ON ALL SIDES WITH CORNERS SEALED TO MAKE PAN WATERTIGHT.
3. PAN SHALL BE SUPPORTED BY PIPE HANGERS AND SHALL DRAIN CLEAR OF ELECTRICAL EQUIPMENT.
4. PROVIDE A 3/4" DRAIN PIPE FOR EACH PAN TERMINATING ABOVE NEAREST CONVENIENT SINK OF FLOOR DRAIN.

R. SLOPE AND DRAIN ALL DUCTS EXPOSED TO MOISTURE, CONSTRUCT OF ALUMINUM AND DO NOT INTERNALLY LINE.

2.02 PIPE, PIPE FITTINGS, AND PIPE SUPPORTS

A. WHEN A PIPE SIZE IS NOT INDICATED, THE CONTRACTOR SHALL REQUEST THE PIPE SIZE FROM THE ENGINEER. ALL PIPING SHALL BE INSTALLED STRAIGHT AND TRUE, PARALLEL OR PERPENDICULAR TO THE BUILDING CONSTRUCTION. PIPING SHALL BE INSTALLED TO ALLOW FOR EXPANSION WITHOUT DAMAGE TO BUILDING FINISHES, STRUCTURE, PIPING, EQUIPMENT, OR OTHER COMPONENTS. PROVIDE OFFSETS, U-BENDS, OR EXPANSION JOINTS AS REQUIRED. WHERE A SECTION OF PIPING IS NOT INDICATED BUT IS OBVIOUSLY REQUIRED FOR COMPLETION OF THE SYSTEM, THE CONTRACTOR SHALL PROVIDE SUCH PIPING AT NO ADDITIONAL COST TO THE PROJECT. MITERED JOINTS OR FIELD-FABRICATED PIPE BENDS SHALL NOT BE ACCEPTED. PIPING SHALL CLEAR ALL WINDOWS, DOORS, LOUVERS, AND OTHER BUILDING OPENINGS.

B. ALL PIPING SHALL BE SUPPORTED IN A NEAT AND WORKMANLIKE MANNER. WHEREVER POSSIBLE, PARALLEL RUNS OF HORIZONTAL PIPING SHALL BE GROUPED ON TRAPEZE-TYPE HANGERS. VERTICAL RISERS SHALL BE SUPPORTED AT EACH FLOOR LINE WITH APPROVED STEEL PIPE RISER CLAMPS. THE USE OF WIRE OR PERFORATED METAL TO SUPPORT PIPING SHALL NOT BE PERMITTED. HANGING PIPING FROM OTHER PIPING SHALL NOT BE PERMITTED. SPACING OF PIPE SUPPORTS SHALL NOT EXCEED EIGHT (8) FEET FOR PIPE SIZES UP TO 1-1/4 INCHES AND TEN (10) FEET FOR ALL OTHER PIPING. SMALL VERTICAL PIPES 1 INCH AND LESS SHALL BE BRACKETED TO WALLS, STRUCTURAL MEMBERS, OR OTHER BUILDING COMPONENTS AT FOUR (4) FOOT INTERVALS TO PREVENT VIBRATION OR DAMAGE. INSULATED PIPING SHALL BE SUPPORTED ON RIGID INSULATION BLOCKS AT EACH HANGER TO PREVENT CRUSHING OF THE INSULATION. HANGERS SHALL PASS COMPLETELY AROUND THE INSULATION JACKET AND SHALL INCLUDE A STEEL PROTECTIVE SADDLE TO PREVENT COMPRESSION OF THE INSULATION.

C. WHERE PIPING RESTS DIRECTLY ON A HANGER, CLIP, BRACKET, OR OTHER SUPPORT, THE SUPPORT ELEMENT SHALL BE OF THE SAME MATERIAL AS THE PIPE OR SHALL BE ELECTRICALLY ISOLATED TO PREVENT DAMAGE FROM ELECTROLYSIS. DO NOT ALLOW COPPER PIPING TO REST DIRECTLY ON FERROUS STRUCTURAL MEMBERS, EQUIPMENT, OR OTHER FERROUS MATERIALS WITHOUT ELECTROLYTIC ISOLATION.

D. IN GENERAL, PIPING SHALL BE INSTALLED CONCEALED. ALL CEILING PIPING SHALL BE INSTALLED AS HIGH AS POSSIBLE AND ROUTED TO AVOID CONFLICTS WITH OTHER TRADES AND FACILITATE OWNER MAINTENANCE. LOCATIONS OF PIPING IN INTERIOR PARTITIONS SHALL BE COORDINATED WITH THE PARTITION CONSTRUCTION. WHERE EXPOSED RISERS OCCUR, THEY SHALL BE INSTALLED AS CLOSE TO WALLS AS PRACTICABLE.

E. PIPING CARRYING WATER OR OTHER FLUIDS SUBJECT TO FREEZING SHALL NOT BE INSTALLED IN LOCATIONS SUBJECT TO FREEZING. WHEN IN DOUBT, CONSULT THE ENGINEER.

F. PIPING FOR ALL DRAINAGE SYSTEMS SHALL BE INSTALLED TO PERMIT FLOW, TRAPPING, AND VENTING IN ACCORDANCE WITH APPLICABLE CODES AND ACCEPTED PRACTICE.

G. WHERE PIPING IS NOT INDICATED ON THE DRAWINGS BUT IS OBVIOUSLY REQUIRED, CONTACT THE ENGINEER PRIOR TO SUBMISSION OF A BID PROPOSAL.

H. PAY PARTICULAR ATTENTION TO CONFLICTS BETWEEN PIPING AND OTHER WORK. DO NOT INSTALL PIPING UNTIL CONFLICTS ARE RESOLVED. IF NECESSARY, CONTACT THE ENGINEER.

I. PIPING MATERIALS WITHIN EACH SYSTEM SHALL, TO THE EXTENT PRACTICABLE, BE OF THE SAME MATERIAL. FREQUENT MATERIAL TRANSITIONS SHALL BE AVOIDED AND SHALL NOT BE MADE WITHOUT THE USE OF INSULATING UNIONS AND APPROVAL OF THE ENGINEER.

J. ALL PIPING SHALL BE CAPPED OR PLUGGED DURING INSTALLATION AS REQUIRED TO KEEP THE SYSTEM CLEAN AND FREE OF DEBRIS AND MOISTURE.

K. PROVIDE EXPANSION JOINTS WHERE INDICATED ON THE DRAWINGS AND WHERE REQUIRED BY GOOD ENGINEERING PRACTICE. EXPANSION JOINTS SHALL BE GUIDED AND ANCHORED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE EXPANSION JOINT MANUFACTURER'S ASSOCIATION.

L. WHERE PIPING PENETRATES INTERIOR OR EXTERIOR WALLS, THE PENETRATION SHALL BE SEALED AIRTIGHT. REFER TO THE SLEEVING, CUTTING, PATCHING, AND REPAIRING SECTION OF THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

M. ALL PIPING AND MATERIALS SHALL BE NEW, MANUFACTURED IN THE UNITED STATES, AND SHALL CONFORM TO THE FOLLOWING MINIMUM STANDARDS:

1. COPPER TUBE: TYPE K, L, AND M; ASTM B88-62. TYPE DWV: ASTM B306-62.
2. CAST BRASS AND WROUGHT COPPER FITTINGS: ASA B16.18.
3. SOLDER: HANDY AND HARMAN, UNITED WIRE AND SUPPLY, AIR REDUCTION CO., OR APPROVED EQUIVALENT.

N. CONDENSATE DRAIN LINES FROM COOLING EQUIPMENT:

1. PROVIDE TYPE M COPPER TUBING WITH SWEAT FITTINGS AND 95/5 SOLDER.
2. PROVIDE A MINIMUM SLOPE OF 1/4 INCH PER FOOT IN THE DIRECTION OF FLOW.

O. INTERIOR PIPING FOR VARIABLE REFRIGERANT FLOW SYSTEMS AND SPLIT SYSTEMS SHALL BE ACR SOFT COPPER TUBE WITH LONG-RADIUS BENDS OR ACR HARD COPPER TUBE IN ALL SIZES AS REQUIRED BY THE MANUFACTURER. EXTERIOR REFRIGERANT PIPING SHALL BE ACR HARD COPPER TUBE. FITTINGS SHALL BE WROUGHT OR FORGED COPPER WITH SILVER-SOLDERED JOINTS CONTAINING A MINIMUM OF FIFTEEN PERCENT (15%) SILVER. GENERAL NOTES:

1. REFRIGERANT LINE SIZING AND INSTALLATION SHALL COMPLY WITH HVAC EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.
2. REFRIGERANT PIPING SHALL BE CONTINUOUSLY PURGED WITH NITROGEN DURING INSTALLATION AND SOLDERING.
3. UPON COMPLETION OF INSTALLATION, THE REFRIGERANT SYSTEM SHALL BE EVACUATED TO 25 MICRONS FOR EIGHT (8) HOURS.
4. FOR SINGLE-ZONE, ONE-TO-ONE SYSTEMS, PIPING SHALL BE PERMITTED UP TO 82 FEET VERTICAL DIFFERENTIAL AND 99 FEET TOTAL LENGTH BETWEEN THE CONDENSING UNIT AND INDOOR UNIT. REFER TO MANUFACTURER'S REQUIREMENTS FOR FINAL INSTALLATION LIMITATIONS.

P. PIPING INSTALLATION

1. INSTALL HANGERS AND SUPPORTS AT INTERVALS REQUIRED BY THE APPLICABLE MECHANICAL CODE.
2. SUPPORT VERTICAL PIPING AT EACH FLOOR AND AS REQUIRED BY THE APPLICABLE MECHANICAL CODE.
3. PIPING 2 INCHES AND SMALLER SHALL BE PROVIDED WITH MID-STORY GUIDES.

2.03 GRILLES, REGISTERS AND DIFFUSERS

A. PROVIDE ALL AIR OUTLETS AND RETURNS OF THE TYPE AND SIZES, AS SELECTED AND INDICATED ON DRAWING. ALL DUCTED RETURN AND EXHAUST OUTLETS SHALL HAVE OPPOSED BLADE DAMPERS (ADJUSTABLE THROUGH THE FACE). PROVIDE FRAMES AND MOUNTING TYPES AS REQUIRED TO MATCH SURROUNDING CEILING CONSTRUCTION. FINISHES TO BE SELECTED BY THE ARCHITECT.

B. ALL CEILING TYPE AIR DIFFUSERS SHALL BE PROVIDED WITH EQUALIZING DEFLECTOR.

C. A SCHEDULE OF DIFFUSERS, GRILLES AND REGISTERS WITH MANUFACTURERS MODELS, SIZES, ACCESSORIES, FINISHES, ETC., SHALL BE SUBMITTED FOR APPROVAL PRIOR TO RELEASE FOR FABRICATION AND DELIVERY

D. DIFFUSERS SHOWN ON DIFFUSER SCHEDULE SHALL BE CHANGED TO MATCH EXISTING DIFFUSER TYPE WHERE EXISTING DIFFUSERS ARE REMAINING.

E. ALL LINEAR DIFFUSERS SHALL BE PROVIDED WITH PATTERN CONTROL VANES. ALL ADJUSTABLE PATTERN DEFLECTORS SHALL BE FIELD ADJUSTED TO OPTIMIZE AIR DISTRIBUTION PREVENTING DRAFT CONDITIONS. CONTRACTOR SHALL PLAN FOR A SECOND COMFORT FIELD ADJUSTMENT PER OWNER/ENGINEER DISCRETION.

F. ALL UNUSED PORTIONS OF SUPPLY LINEAR DIFFUSERS SHALL BE USED AS RETURN GRILLE AND SHOULD BE PROVIDED WITH LIGHT SHIELDS.

G. ALL LINEAR DIFFUSERS AND DIFFUSERS IN INACCESSIBLE CEILINGS SHALL BE PROVIDED WITH A REMOTE OPERATED OPPOSED BLADE DAMPER AND A 3-FOOT (MINIMUM) FLEXIBLE ADJUSTMENT CABLE WITH 1/8-INCH KEY OPERATOR.

2.04 INSULATION REQUIREMENTS

A. INSULATION SHALL BE APPLIED TO DUCTWORK OF MATERIALS AS SPECIFIED HEREIN AND FOR APPLICABLE SYSTEMS OF THIS PROJECT. INSULATION SHALL HAVE A FLAME SPREAD RATING NOT EXCEEDING 25 AND A SMOKE DEVELOPED INDEX OF 50 OR LESS AND SHALL MEET THE REQUIREMENTS OF ASTM, NFPA.

B. INSULATION SHALL BE CONTINUOUS THROUGH WALL AND SLAB SLEEVE OPENINGS EXCEPT FOR RATED WALLS OR SLABS WHERE AN APPROVED FIRESTOP IS REQUIRED AS PER NFPA.

C. INSULATION OF COLD SURFACES WHERE VAPOR BARRIER JACKETS ARE SPECIFIED SHALL BE APPLIED WITH AN UNBROKEN VAPOR SEAL. HANGERS AND SUPPORTS THAT ARE SECURED TO COLD SURFACES SHALL BE ADEQUATELY INSULATED TO PREVENT CONDENSATION.

D. ALL EQUIPMENT, FITTINGS, DEVICES, ETC REQUIRING SERVICING OR INSPECTION SHALL HAVE REMOVABLE INSULATION WHICH CAN BE REPLACED WITHOUT DAMAGE.

E. ALL LEAK AND PRESSURE TESTS SHALL BE COMPLETED PRIOR TO THE INSTALLATION OF ANY INSULATION.

F. DUCTWORK INSULATION:

1. ALL NEW AND EXISTING SHEET METAL DUCTWORK SHALL BE INSULATED WITH FLEXIBLE DUCT WRAP INSULATION, OF REQUIRED THICKNESS AND DENSITY TO ACHIEVE A MINIMUM INSTALLED R-6 INSULATIVE VALUE AT 75 DEGREES F MEAN TEMPERATURE WHEN LOCATED WITHIN A CONDITIONED OR UNCONDITIONED SPACE. INSULATION TO BE PROVIDED WITH REINFORCED FOIL FACED, FLAME RESISTANT, ALUMINUM FOIL VAPOR BARRIER. ALL INSULATION SHALL BE SECURED WITH DUCT ADHESIVE AND SEAMS SEALED BY TWO-INCH SEALING LIP WITH ADHESIVE AND FASTENED WITH 16 GAUGE RUST RESISTANT WIRE OR FIBERGLASS CORD ON 12" CENTERS. ON DUCTS OVER 24" WIDE, WELDED PINS AND CLIPS SHALL BE USED ON THE UNDERSIDE FOR FASTENING INSULATION.

G. PIPING INSULATION:

1. CONDENSATE DRAIN LINES
   a. PIPING 1-1/2 INCHES OR LESS: PROVIDE 1/2-INCH THICK INSULATION.
2. REFRIGERANT LIQUID AND SUCTION LINES, INTERIOR AND EXTERIOR
   a. PROVIDE IMCOA, NOMACO, OR ARMACELL CLOSED-CELL POLYETHYLENE INSULATION, 1.5 LB/FT³ DENSITY, 0.24 BTU-HR-FT³-°F/IN THERMAL CONDUCTIVITY AT 75°F, ZERO VAPOR PERMEANCE, AND 25/50 FLAME AND SMOKE SPREAD PER NFPA 90 REQUIREMENTS. ELASTOMERIC CLOSED-CELL INSULATION MEETING THESE REQUIREMENTS IS ALSO ACCEPTABLE. INSTALL INSULATION IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.
   b. ALL REFRIGERANT PIPE SIZES SHALL BE INSULATED WITH 1-INCH THICK INSULATION JACKET.
   c. INSULATE ALL REFRIGERANT PIPING AS RECOMMENDED BY THE MANUFACTURER.

2.05 ACOUSTICAL TREATMENT

A. INTERNAL THERMALLY ACOUSTIC DUCT LINING SHALL BE 1" THICK FIBER-FREE, BLACK, FLEXIBLE, CLOSED-CELL, NON-PARTICULATING FORMALDEHYDE-FREE ELASTOMERIC INSULATION K=0.27 BTU IN./HR. FT^2 °F @ 75°F. INSTALL USING MANUFACTURERS ACCESSORIES AND INCLUDING LOW VOC SPRAY CONTACT ADHESIVE. PROVIDE AND INSTALL ONLY WHERE INDICATED.

B. INSTALL LINER IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. COMPLETELY COVER ALL PORTIONS OF DUCTWORK PLENUMS AND CASINGS WITH APPROVED ADHESIVE. INSTALL LINER WITH ALL TRAVERSE JOINTS NEATLY BUTTED WITH NO INTERRUPTIONS OR GAPS. COVER ALL EXPOSED EDGES, JOINTS, MECHANICAL FASTENERS AND ANY DAMAGED AREAS WITH ADHESIVE. PROVIDE METAL NOSING AT EQUIPMENT DISCHARGES AND AT END EDGES OF LINING. SECURE LINER WITH APPROVED MECHANICAL FASTENERS INSTALLED IN ACCORDANCE WITH SMACNA DUCT LINER APPLICATION STANDARD.

C. DO NOT EXTERNALLY INSULATE ACOUSTICALLY LINED DUCTS.

D. DO NOT INTERNALLY LINE DUCTWORK WHICH IS A PART OF AN OUTSIDE AIR SYSTEM WHICH DISTRIBUTES UNCONDITIONED AIR.

E. FURNISH AND INSTALL ACOUSTICAL LINING IN DUCTWORK, PLENUMS AND CASINGS AS SHOWN ON THE DRAWINGS AND AS SPECIFIED BELOW:

1. ALL DUCTS WITH DUCT VELOCITIES GREATER THAN 2,000 FPM SHALL HAVE ACOUSTICAL LINING FACED WITH 24 GAUGE PERFORATED ALUMINUM OR GALVANIZED STEEL SUPPORTED 12" ON CENTER.
2. A MINIMUM DISTANCE OF 20 FEET FROM ALL AIR CONDITIONING UNIT INLETS AND DISCHARGES.
3. ALL TERMINAL BOXES SUPPLY DUCTWORK SHALL BE LINED FOR A MINIMUM DISTANCE OF 15 FEET DOWNSTREAM OF BOX DISCHARGE.
4. ALL RETURN/EXHAUST FANS SHALL BE ACOUSTICALLY LINED FOR A MINIMUM DISTANCE OF 20 FEET OF THE FAN INTAKE AND DISCHARGE OPENING.
5. ALL TRANSFER DUCTS SHALL BE PROVIDED WITH 1" THICK ACOUSTICAL LINING FOR ACOUSTICAL PURPOSES ONLY.
6. ALL DUCTWORK PASSING THROUGH OR SERVING CONFERENCE AND MEETING ROOMS SHALL BE PROVIDED WITH ACOUSTICAL LINING.
7. ALL EXPOSED DUCTWORK.

2.06 VIBRATION ISOLATION SYSTEMS

A. ALL ROTATING, REVOLVING OR RECIPROCATING EQUIPMENT, INCLUDING PIPING CONNECTIONS TO THIS EQUIPMENT SHALL BE ACOUSTICALLY ISOLATED TO PREVENT THE TRANSMISSION OF OBJECTIONABLE NOISES, SOUND OR VIBRATIONS TO THE OCCUPIED SPACES AND TO THE BUILDING STRUCTURES. ALL VIBRATION ISOLATION PRODUCTS SHALL BE SPECIFICALLY DESIGNED FOR THEIR INTENDED USE.

B. STATIC DEFLECTION OF ISOLATORS SHALL BE A MINIMUM OF 90% EFFICIENT.

C. MANUFACTURER OF VIBRATION ISOLATION EQUIPMENT SHALL DETERMINE VIBRATION ISOLATOR SIZES AND LOCATIONS, PROVIDE SUITABLE PIPING AND EQUIPMENT VIBRATION ISOLATION SYSTEMS, GUARANTEE SPECIFIED ISOLATION SYSTEM ATTENUATION AND DEFLECTION, AND PROVIDE INSTALLATION INSTRUCTIONS, DRAWINGS AND FIELD SUPERVISION TO ASSURE PROPER INSTALLATION AND PERFORMANCE.

D. MOUNTING TYPES:

A. PROVIDE FLEXIBLE CONNECTIONS BETWEEN ALL FANS, AHU, AC UNITS AND DUCTWORK AS PER DUCTWORK SPECIFICATION SECTION.

A. VIBRATION ISOLATORS FOR FLOOR OR CEILING SUPPORTED EQUIPMENT SHALL HAVE A MAXIMUM LATERAL MOTION UNDER EQUIPMENT START-UP OR SHUT-DOWN CONDITIONS OF 1/4" AND MOTIONS IN EXCESS SHALL BE RESTRAINED BY SPRING TYPE MOUNTINGS.

B. VIBRATION ISOLATOR SHALL BE PROVIDED BY MASON INDUSTRIES, VIBREX, VIBRATION ELIMINATOR CO., CONSOLIDATED KINETICS CO., OR APPROVED EQUAL.

2.07 EQUIPMENT

A. PACKAGED GAS/ELECTRIC AIR HANDLING UNIT

1. ACCEPTABLE MANUFACTURERS SHALL BE CARRIER, BASIS OF DESIGN. ALTERNATE MANUFACTURERS SHALL BE TRANE OR DAIKIN FOR EQUIVALENCY OF CAPACITY, DIMENSIONS, CONTROLS, ELECTRICAL CHARACTERISTICS, SOUND LEVELS, AND ACCESSORIES.
2. UNIT SHALL BE A FACTORY-ASSEMBLED PACKAGED UNIT WITH DIRECT EXPANSION COOLING, GAS HEAT, AND SUPPLY AIR VOLUME OPERATION AS SCHEDULED. UNIT SHALL BE SUITABLE FOR GROUND MOUNT APPLICATION WITH SIDE DISCHARGE CAPABILITY
3. UNIT SHALL BE CARRIER MODEL 48K, SIZE 060, NOMINAL 60 TON CAPACITY, WITH HORIZONTAL SUPPLY AND HORIZONTAL RETURN AIR CONFIGURATION.
4. UNIT SHALL UTILIZE R-454B REFRIGERANT AND COMPLY WITH ALL APPLICABLE FEDERAL, STATE OF MASSACHUSETTS, AND LOCAL REFRIGERANT REGULATIONS IN EFFECT AT THE TIME OF EQUIPMENT INSTALLATION.
5. UNIT SHALL BE RATED FOR 460V, 3 PHASE, 60 HERTZ ELECTRICAL SERVICE. PROVIDE ELECTRICAL COMPONENTS AND WIRING IN ACCORDANCE WITH NEC REQUIREMENTS.
6. UNIT SHALL PROVIDE A MINIMUM GROSS COOLING CAPACITY OF 687 MBH AT THE SCHEDULED DESIGN CONDITIONS INDICATED IN THE CONTRACT DOCUMENTS.
7. UNIT SHALL PROVIDE TWO-STAGE GAS HEAT WITH A MAXIMUM INPUT CAPACITY OF 975 MBH AND A MINIMUM STEADY-STATE THERMAL EFFICIENCY OF 81 PERCENT.
8. UNIT SHALL BE FURNISHED WITH FACTORY-INSTALLED ULTRA-LOW LEAK ECONOMIZER COMPLETE WITH OUTDOOR AIR CONTROL DAMPERS.
9. UNIT SHALL BE PROVIDED WITH FACTORY-INSTALLED STAINLESS STEEL CONDENSATE DRAIN PAN.
10. UNIT SHALL BE PROVIDED WITH FACTORY-INSTALLED PRE-FILTER STATUS SWITCH FOR MONITORING FILTER CONDITION.
11. PROVIDE FACTORY-INSTALLED 40 HP SUPPLY FAN MOTOR WITH VARIABLE FREQUENCY DRIVE.
12. SUPPLY FAN SHALL BE SIZED FOR SCHEDULED AIRFLOW AT THE SCHEDULED EXTERNAL STATIC PRESSURE INDICATED ON THE DRAWINGS. CONTRACTOR SHALL VERIFY FINAL FAN SELECTION BASED UPON ACTUAL INSTALLED CONDITIONS.
13. CONTRACTOR SHALL COORDINATE FINAL FAN SPEED, DRIVE SETTINGS, AND AIR BALANCE REQUIREMENTS TO ACHIEVE THE SCHEDULED AIRFLOW.
14. CONDENSER COIL SHALL BE E-COATED MICROCHANNEL CONSTRUCTION FOR ENHANCED CORROSION RESISTANCE. EVAPORATOR COIL SHALL BE ALUMINUM FIN.

2.08 AUTOMATIC TEMPERATURE CONTROL

A. GENERAL

1. PROVIDE MANUFACTURER SUPPLIED LINE-VOLTAGE 24-HR PROGRAMMABLE THERMOSTAT AND 200FT OF CONTROL WIRING FOR CONNECTION TO NEW T-STAT LOCATION.

B. ELECTRIC WIRING:

1. ALL ELECTRIC WORK (EXCEPT FOR MOTOR FEEDERS, WIRING BETWEEN MOTORS, MOTOR CONTROLLERS, FEEDER PANELS, FUSES, CIRCUIT BREAKERS AND BUS BARS) REQUIRED FOR THE AUTOMATIC TEMPERATURE CONTROL SYSTEM SHALL BE PROVIDED BY THIS CONTRACTOR. WORK SHALL INCLUDE BUT NOT BE LIMITED TO TIME SWITCHES, DAMPER MOTORS, DAMPER SWITCHES, ELECTRIC THERMOSTAT, ELECTRIC RELAYS, E/P SWITCHES, INTERLOCKING WIRING, WIRE, CONDUIT, ETC.
2. ALL CONTROL POWER, WIRING AND TRANSFORMERS FOR DAMPERS, ACTUATORS, VAV BOXES, CONTROL PANELS, ETC. TO BE PROVIDED BY THE CONTROLS CONTRACTOR FROM A SOURCE DESIGNATED BY THE ELECTRICAL CONTRACTOR. CIRCUITS FOR CONTROL DEVICES HAVE BEEN DESIGNATED IN THE ELECTRICAL PANEL SCHEDULES.
3. THE CONTROL MANUFACTURER SHALL INCLUDE WIRING DIAGRAMS IN HIS SHOP DRAWINGS SUBMITTALS FULLY COORDINATED WITH THE ELECTRICAL CONTRACTORS WORK. IT SHALL BE THE AUTOMATIC TEMPERATURE CONTROL CONTRACTORS RESPONSIBILITY TO PROVIDE ALL WIRING AND CONDUIT AS REQUIRED TO ACHIEVE THE FUNCTION CALLED FOR IN THESE SPECIFICATIONS, CONFORMING WITH LOCAL CODES FOR MATERIAL AND INSTALLATION. THE ELECTRICAL SPECIFICATION FOR THE PROJECT ELECTRICAL WORK IS TO BE FOLLOWED.
4. ALL EXPOSED CONTROL WIRING SHALL BE INSTALLED IN CONDUIT.
5. ALL ROOM THERMOSTATS/SENSORS AND SWITCH LOCATIONS SHALL BE SUBMITTED FOR REVIEW BY THE ARCHITECT AND ENGINEER PRIOR TO INSTALLATION WHETHER THE DEVICES ARE SHOWN ON PLANS OR NOT.
6. ALL ROOM THERMOSTATS/SENSORS SHALL HAVE OVERRIDE SWITCH, LOCAL READOUT AND LOCAL ADJUSTMENT.

C. AUTOMATIC DAMPERS:

1. PROVIDE CONTROLS FOR ALL THE AUTOMATIC DAMPERS, AS SPECIFIED IN THE DUCTWORK SECTION, AND SHOWN ON THE DRAWINGS.
2. CONTROL MOTORS OR ACTUATORS SHALL BE OF THE ELECTRONIC TYPE, UNLESS OTHERWISE NOTED, OF APPROPRIATE SIZE AND QUANTITIES TO PROVIDE TWO-POSITION OR PROPORTIONING CONTROL ACTION AS SPECIFIED. PROPORTIONING TYPE SHALL BE EQUIPPED WITH PILOT TYPE POSITIONERS. PILOT POSITIONERS SHALL BE SELECTED FOR VARIED SPRING RANGES AND ADJUSTABLE WITHOUT DISMANTLING POSITIONER AND CONTROL MOTOR.
3. AUTOMATIC DAMPERS EXPOSED TO THE ELEMENTS SHALL HAVE ELECTRIC ACTUATORS WITH ALL REQUIRED ACCESSORIES.

PART 3 - EXECUTION

3.01 EQUIPMENT

A. PROVIDE AND INSTALL ALL EQUIPMENT AND ACCESSORIES OF THE SIZES AND CAPACITIES AS SCHEDULED AND AS INDICATED ON THE DRAWINGS AND IN ACCORDANCE WITH APPROVED SHOP DRAWINGS AND MANUFACTURERS RECOMMENDATIONS. PROVIDE ALL MOTOR STARTERS AS REQUIRED; MOTOR STARTERS WILL BE INSTALLED BY THIS CONTRACTOR AND WIRED BY ELECTRICAL TRADE.

B. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL REQUIRED CLEARANCES FOR SERVICING AND MAINTENANCE. COORDINATE REQUIREMENTS WITH ALL TRADES.

C. IDENTIFICATION OF EQUIPMENT AND CONTROLS:

1. ALL EQUIPMENT SHALL BE STENCILED OR LABELED WITH LAMACOID PLATES SCREWED THEREON WHICH SHALL INDICATE SYSTEMS SERVICE.
2. CONTRACTOR TO SUBMIT LIST OF EQUIPMENT TO RECEIVE LABELS AND THE COORDINATED DESIGNATIONS, SIZE OF LABEL LETTERING, PLATE SIZE AND COLOR FOR REVIEW PRIOR TO INSTALLATION.

3.02 AIR BALANCING

A. AIR SYSTEM BALANCING SHALL BE PERFORMED BY AN APPROVED INDEPENDENT CERTIFIED TESTING AND BALANCING FIRM. THE TESTING AND BALANCING FIRM SHALL BE AABC, NEBB, TABB CERTIFIED OR DIRECTLY SUPERVISED BY A STAFFED LICENSED PROFESSIONAL ENGINEER WITH A MINIMUM OF FIVE YEARS EXPERIENCE. AIR SYSTEM BALANCING SHALL BE PERFORMED IN THE PRESENCE OF A BUILDING REPRESENTATIVE.

3.03 ELECTRICAL WORK

A. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR POWER WIRING UNDER A SEPARATE DIVISION OF CONTRACT WORK. AUTOMATIC TEMPERATURE, SAFETY AND INTERLOCKING CONTROLS FOR MOTORS, MOTOR STARTERS AND OTHER ELECTRICAL APPARATUS AND DEVICES SHALL BE PROVIDED BY THE HVAC CONTRACTOR. CONTROL WIRING SHALL INCLUDE BUT NOT LIMITED TO ALL 12, 24, AND 120 VOLT WIRING.

B. THE MECHANICAL CONTRACTOR SHALL PREPARE AND SUBMIT FOR APPROVAL TERMINAL POINT TO TERMINAL POINT, COMPLETELY COORDINATED AND INTEGRATED WIRING DIAGRAMS FOR ALL WIRING REQUIRING FIELD INSTALLATION BY THE ELECTRICAL CONTRACTOR.

C. SPECIFIC WIRING DIAGRAMS OF FACTORY INSTALLED EQUIPMENT WIRING SHALL ALSO BE SUBMITTED FOR APPROVAL AND FURNISHED TO THE ELECTRICAL CONTRACTOR FOR HIS INSTALLATION REQUIREMENTS AND OTHER USES.

D. HVAC CONTRACTOR SHALL MAINTAIN ALL EXISTING CONTROL CONNECTIONS FOR STARTERS TO BE REUSED. CONTRACTOR SHALL COORDINATE EXISTING CONDITIONS AND PROVIDE ALL CONTACTS AND RELAYS REQUIRED FOR EXISTING STARTERS TO BE REPLACED WITH NEW.

E. HVAC CONTRACTOR SHALL COORDINATE WITH THE ELECTRICAL CONTRACTOR FOR THE INSTALLATION OF DUCT DETECTORS. DUCT DETECTOR SHALL BE FURNISHED AND WIRED BY THE ELECTRICAL CONTRACTOR AND MOUNTED BY THE HVAC CONTRACTOR.

CMTA
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161 Worcester Road, Suite 305
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PROJECT
OLD EVERETT HIGH SCHOOL - TASK 5
548 Broadway, Everett, MA 02149

CLIENT
CITY OF EVERETT, MA

CONSULANTS

REGISTRATION

Issue Date

KEYPLAN

ISSUE / REVISION

#	Date	Description

NOT FOR CONSTRUCTION

PROJECT NUMBER
BEMS26

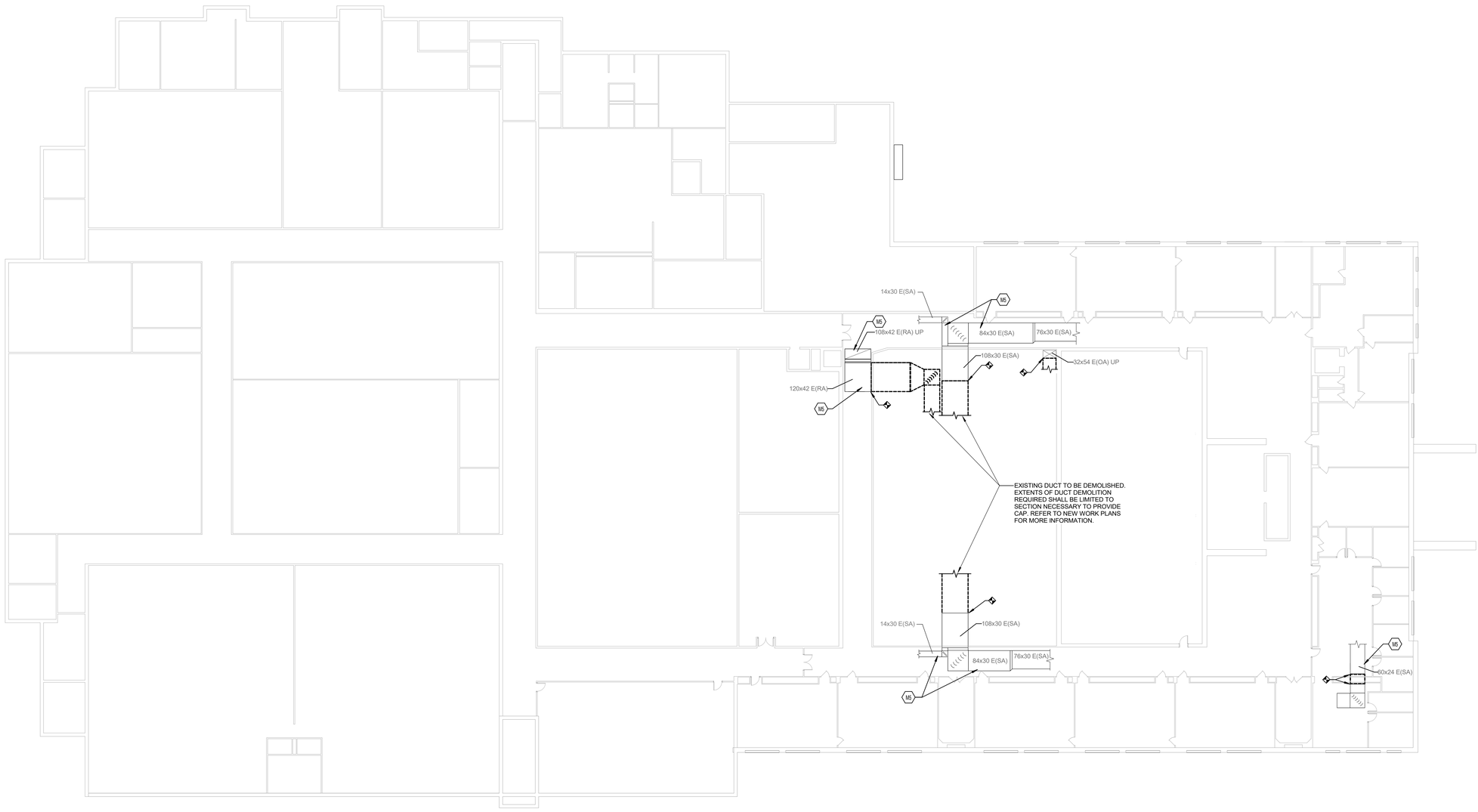
SHEET TITLE
MECHANICAL SPECIFICATIONS

SHEET NUMBER
M-002

FILENAME: Autodesk Docs://Old Everett HS - Task 5 Bandaid/BEMS26_MEP_25.rvt
PLOT TIME: 9/21/2026 3:26:04 PM

TAGGED NOTES

M5	EXISTING DUCT TO REMAIN. PROTECT DURING CONSTRUCTION.



1 MECHANICAL BASEMENT DEMOLITION PLAN
SCALE: 1/16" = 1'-0"

NOT FOR CONSTRUCTION

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PROJECT
OLD EVERETT HIGH SCHOOL - TASK 5
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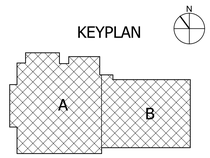
CLIENT
CITY OF EVERETT, MA

CONSULANTS

REGISTRATION

Issue Date

KEYPLAN



ISSUE / REVISION

#	Date	Description

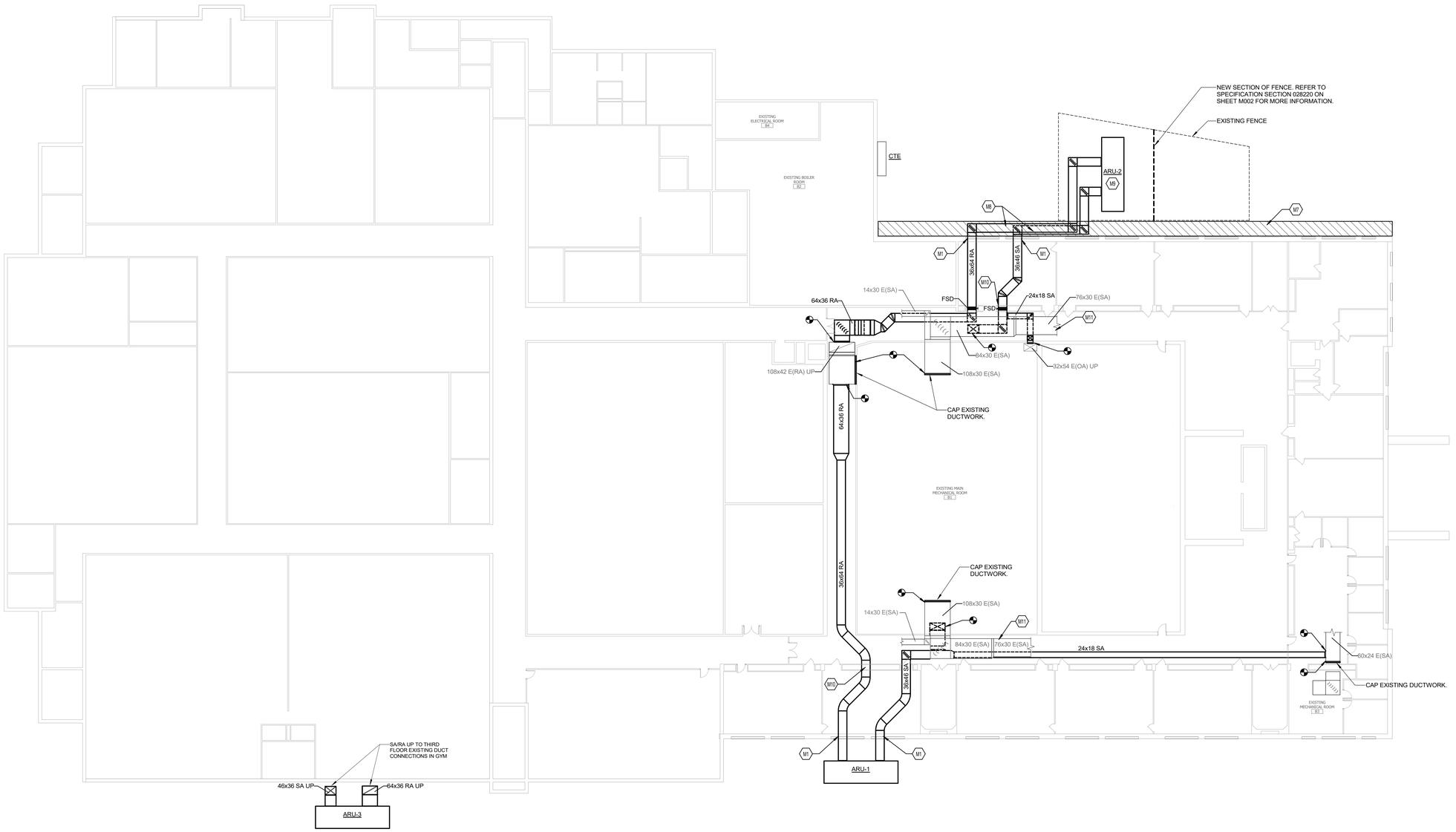
PROJECT NUMBER
BEMS26

SHEET TITLE
MECHANICAL BASEMENT DEMOLITION PLAN

SHEET NUMBER
M-100

TAGGED NOTES

M1	DUCT ROUTED THROUGH EXISTING WINDOW PENETRATION. INFILL REMAINING GAPS AND FLASH/SEAL WATER TIGHT.
M7	GROUND LEVEL TRENCH IN THIS APPROXIMATE LOCATION. DO NOT INSTALL NEW AHU WITHIN 42" FROM RETAINING WALL.
M8	DUCT ROUTED ALONG TRENCH IN THIS APPROXIMATE AREA TO WALL PENETRATION. PROVIDE NEW UNISTRUT SUPPORTS FOR ALL EXPOSED DUCTWORK. ROUTE DUCT THROUGH EXISTING WINDOW AS SHOWN. REFER TO ARCH PLANS FOR ALL PENETRATION AND FLASHING REQUIREMENTS. PROVIDE 1/8" SLOPE FOR ALL DUCTWORK AWAY FROM BUILDING FACADE.
M9	NEW GROUND MOUNTED PACKAGED AIR HANDLING UNIT PROVIDED BY OWNER. INSTALL ACCORDING TO ALL REQUIREMENTS WITHIN MANUFACTURERS' IOM. LOCATE LINE VOLTAGE 24HR PROGRAMMABLE THERMOSTAT ON BUILDING FIRST FLOOR IN PLAN NORTHEAST CORRIDOR. PROVIDE NEW CONCRETE HOUSEKEEPING PAD.
M10	ROUTE DUCT THROUGH WALL PENETRATION IN THIS APPROXIMATE LOCATION. REFER TO ARCHITECTURAL PLANS FOR MORE INFORMATION.
M11	PROVIDE DUCT CLEANING FOR ALL SUPPLY AND RETURN DUCTWORK ASSOCIATED WITH THE DUCT SYSTEM INDICATED.



1 MECHANICAL BASEMENT NEW WORK PLAN
SCALE: 1/16" = 1'-0"

CMTA
A LEGENCE Company
161 Worcester Road, Suite 305
Framingham, MA 01701
T: 508.647.9200

PROJECT

OLD EVERETT HIGH SCHOOL - TASK 5

548 Broadway, Everett, MA 02149

CLIENT

CITY OF EVERETT, MA

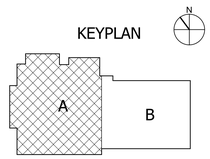
CONSULANTS

REGISTRATION

Issue Date

KEYPLAN

KEYPLAN



ISSUE / REVISION

#	Date	Description

PROJECT NUMBER

BEMS26

SHEET TITLE

MECHANICAL BASEMENT NEW WORK PLAN

SHEET NUMBER

M-200

NOT FOR CONSTRUCTION

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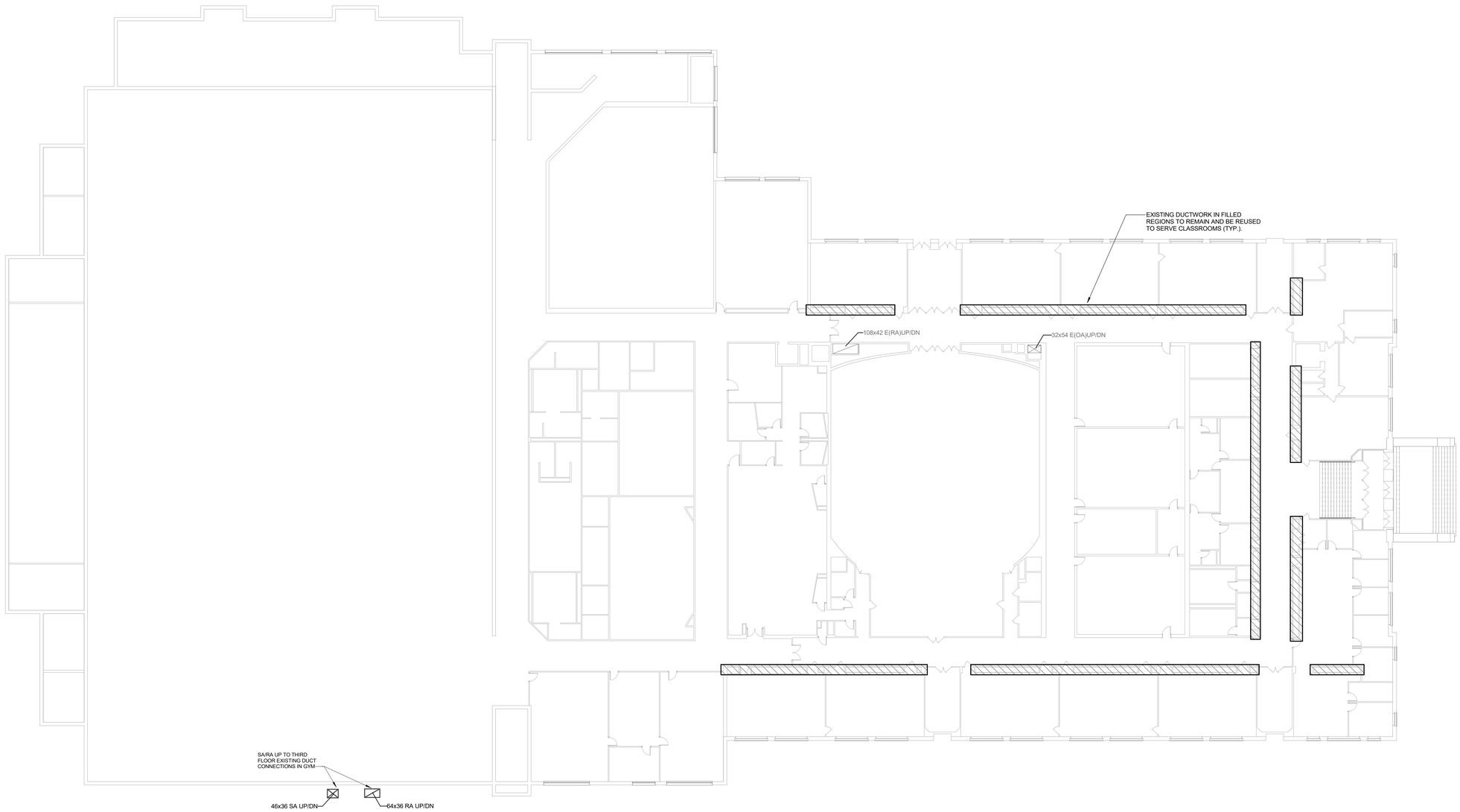

1 MECHANICAL FIRST FLOOR NEW WORK PLAN
SCALE: 1/16" = 1'-0"

NOT FOR CONSTRUCTION

CMTA
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OLD EVERETT HIGH SCHOOL - TASK 5
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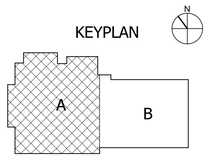
Issue Date

KEYPLAN



ISSUE / REVISION

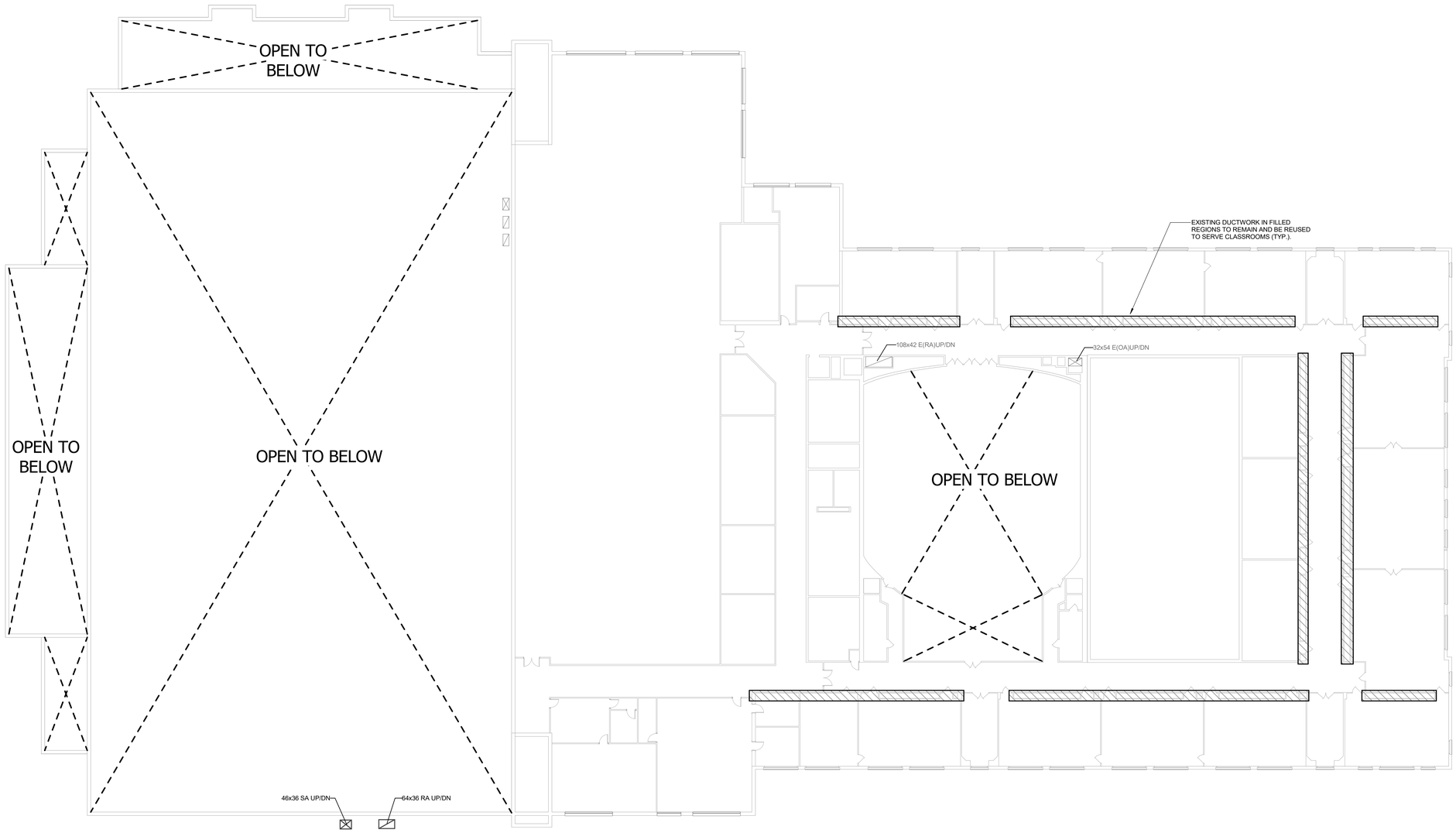
#	Date	Description

PROJECT NUMBER
BEMS26

SHEET TITLE
MECHANICAL FIRST FLOOR NEW WORK PLAN

SHEET NUMBER
M-201

TAGGED NOTES



1 MECHANICAL SECOND FLOOR NEW WORK PLAN
SCALE: 1/16" = 1'-0"

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548 Broadway, Everett, MA 02149

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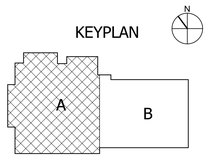
REGISTRATION

Issue Date

KEYPLAN



ISSUE / REVISION

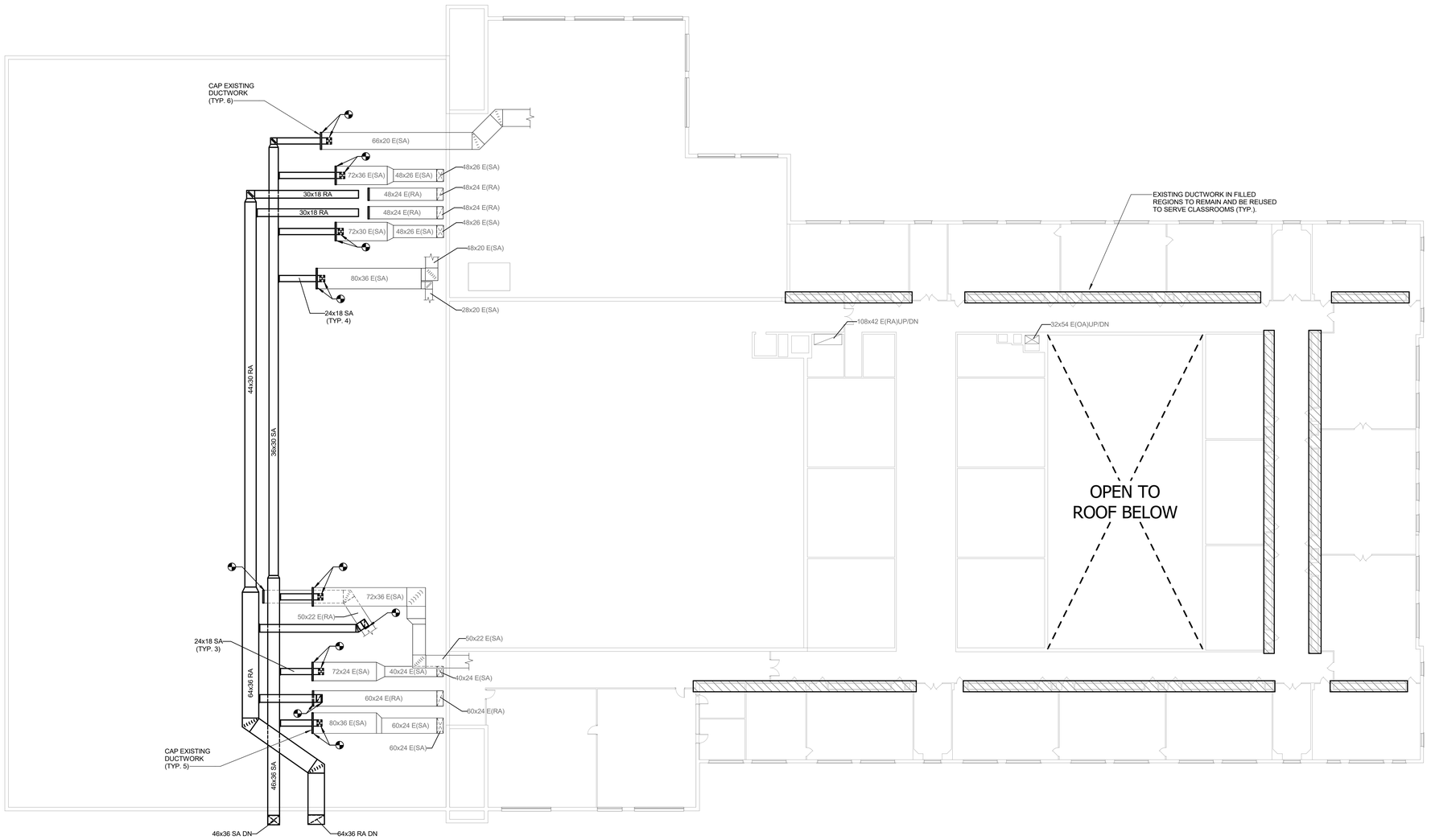
#	Date	Description

PROJECT NUMBER
BEMS26

SHEET TITLE
MECHANICAL SECOND FLOOR NEW WORK PLAN

SHEET NUMBER
M-202

TAGGED NOTES #



1 MECHANICAL THIRD FLOOR NEW WORK PLAN
SCALE: 1/16" = 1'-0"

CMTA
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PROJECT

OLD EVERETT HIGH SCHOOL - TASK 5

548 Broadway, Everett, MA 02149

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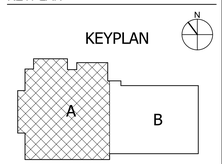
CONSULANTS

REGISTRATION

Issue Date

KEYPLAN



ISSUE / REVISION

#	Date	Description

PROJECT NUMBER

BEMS26

SHEET TITLE

MECHANICAL THIRD FLOOR NEW WORK PLAN

SHEET NUMBER

M-203

NOT FOR CONSTRUCTION

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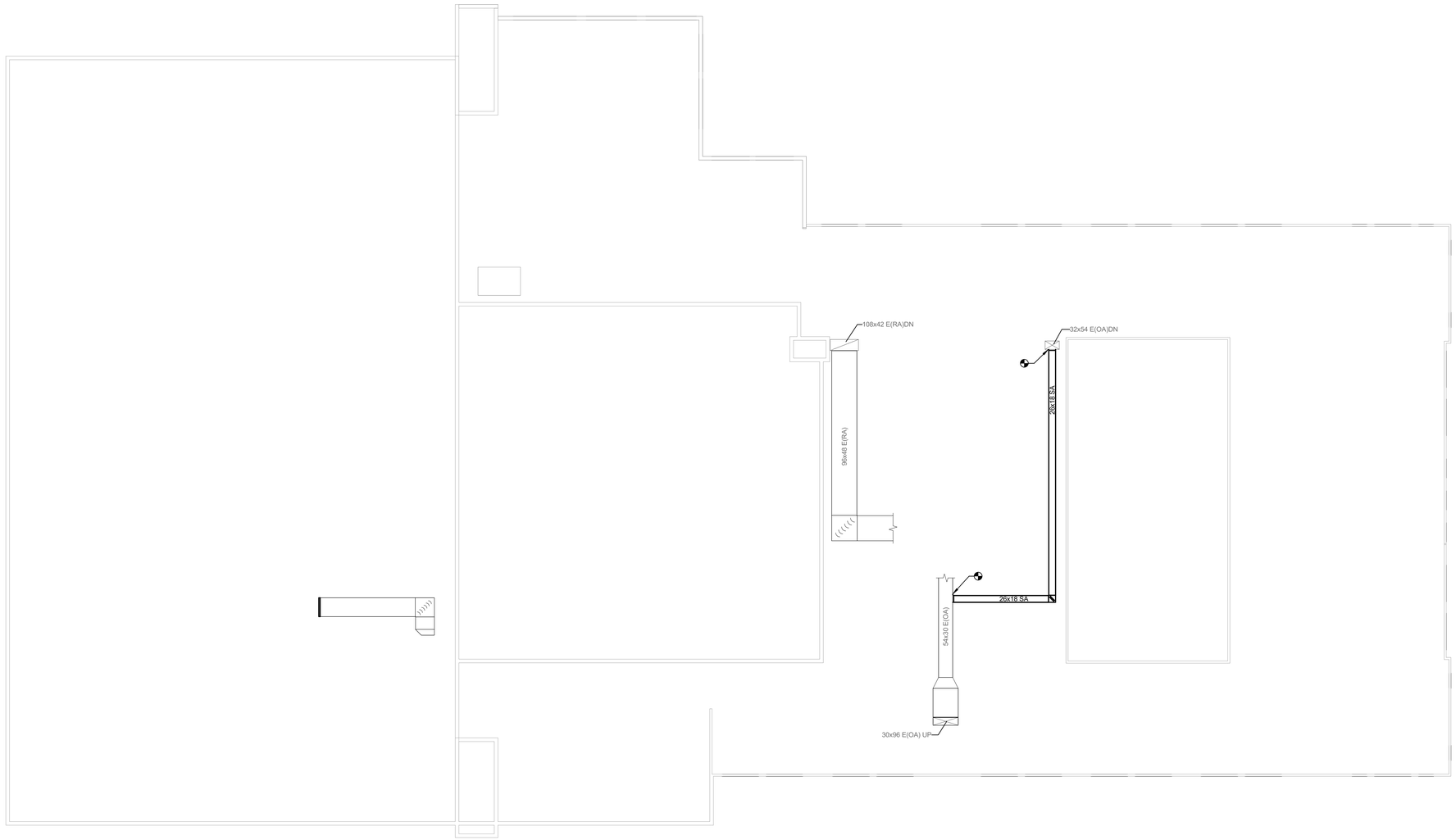

1 MECHANICAL ATTIC NEW WORK PLAN
SCALE: 1/16" = 1'-0"

NOT FOR CONSTRUCTION

CMTA
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PROJECT
OLD EVERETT HIGH SCHOOL - TASK 5
548 Broadway, Everett, MA 02149

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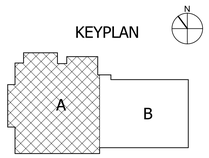
CONSULANTS

REGISTRATION

Issue Date

KEYPLAN

KEYPLAN



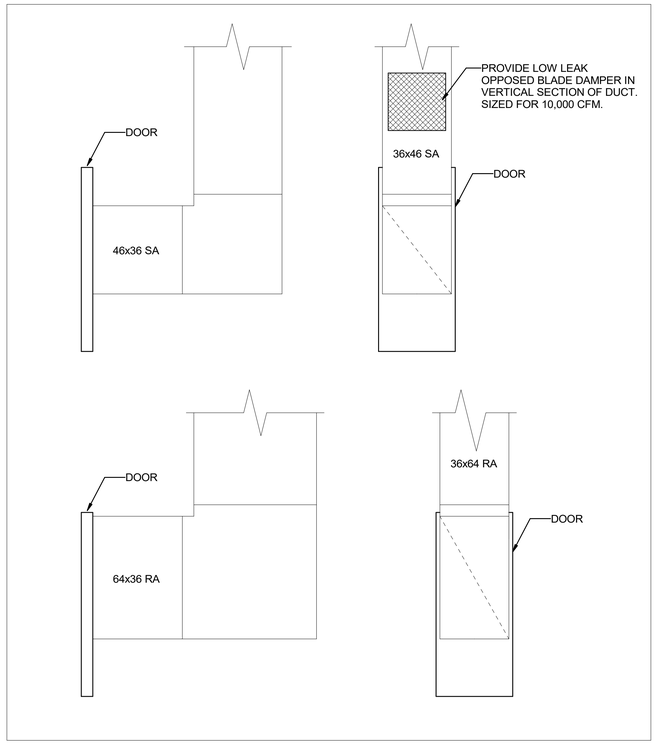
ISSUE / REVISION

#	Date	Description

PROJECT NUMBER
BEMS26

SHEET TITLE
MECHANICAL ATTIC NEW WORK PLAN

SHEET NUMBER
M-204



1 DUCTWORK THROUGH DOORWAY DETAIL
SCALE: NONE

NOT FOR CONSTRUCTION

CMTA
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PROJECT
OLD EVERETT HIGH SCHOOL - TASK 5
548 Broadway, Everett, MA 02149

CLIENT
CITY OF EVERETT, MA

CONSULANTS

REGISTRATION

Issue Date

KEYPLAN

ISSUE / REVISION

#	Date	Description

PROJECT NUMBER
BEMS26

SHEET TITLE
MECHANICAL DETAILS

SHEET NUMBER
M-300

CMTA
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PROJECT

OLD EVERETT HIGH SCHOOL - TASK 5

548 Broadway, Everett, MA 02149

CLIENT

CITY OF EVERETT, MA

CONSULANTS

REGISTRATION

Issue Date

KEYPLAN

ISSUE / REVISION

#	Date	Description

PROJECT NUMBER

BEMS26

SHEET TITLE

MECHANICAL DETAILS

SHEET NUMBER

M-301

NOT FOR CONSTRUCTION

FILENAME: Autodesk Docs://Old Everett HS - Task 5 Bendale/BEMS26_MEP_25.rvt
PLOT TIME: 9/21/2026 3:26:07 PM

GAS-ELECTRIC AIR HANDLING UNIT

UNIT NO.	SERVICE	LOCATION	SUPPLY FAN							EVAPORATOR COIL								INDIRECT GAS-FIRED HEATER					ELECTRICAL SERVICE		OPERATING WEIGHT (LBS)	MANUFACTURER MODEL NO.	REMARKS
			TOTAL CFM	MIN O.A. CFM	STATIC PRESS. (IN. W.G.)		FAN RPM	MOTOR BHP	MOTOR HP	TOTAL MBH	SENSIBLE MBH	REFRIG. TYPE	AIR DATA					INPUT MBH (MIN)	INPUT MBH (MAX)	OUTPUT MBH (MIN)	OUTPUT MBH (MAX)	GAS PRESS. (IN. W.G.)	MCA	V/Ø/Hz			
					TOTAL	EXT.							EAT (°F)		LAT (°F)		P.D. (IN. W.G.)										
													DB	WB	DB	WB											
ARU-1	CLASSROOM WING SOUTH	ON GRADE	24000	4200	--	2.0	1121	32.74	40	691	476.5	R-454B	78.3	65.1	56.6	55.7	0.36	731	975	592	790	7-14	168	460/3/60	7245	CARRIER 48K4B	SEE REMARKS
ARU-2	CLASSROOM WING NORTH	ON GRADE	24000	4200	--	2.0	1121	32.74	40	691	476.5	R-454B	78.3	65.1	56.6	55.7	0.36	731	975	592	790	7-14	168	460/3/60	7245	CARRIER 48K4B	SEE REMARKS
ARU-3	GYM WING CLASSROOMS	ON GRADE	24000	4200	--	2.0	1121	32.74	40	691	476.5	R-454B	78.3	65.1	56.6	55.7	0.36	731	975	592	790	7-14	168	460/3/60	7245	CARRIER 48K4B	SEE REMARKS

REMARKS:

1. UNIT SHALL HAVE A MAXIMUM ESTIMATED SOUND LEVEL AT 10 FEET FROM EQUIPMENT OF 76 dBA PER AMCA 311 STANDARD.
2. PROVIDE UNIT WITH REMOTE AIR-COOLED CONDENSING UNIT OF CAPACITY REQUIRED FOR EVAPORATOR COIL.
3. PROVIDE UNIT WITH VFD FOR SUPPLY FAN MOTOR.
4. UNIT PROVIDED BY OWNER.

AIR COOLED CONDENSER SCHEDULE

UNIT NO.	SERVICE	LOCATION	HEAT REJECTION PARAMETERS			CONDENSER FAN			ELECTRICAL			EER	SOUND DATA								MANUFACTURERS MODEL NO.	REMARKS
			T.H.R. (MBH)	COND. TEMP (°F)	AMB. TEMP (°F)	NO.	HP EACH	RPM	TOTAL KW	FLA	V/Ø/Hz		63 HZ	125 HZ	250 HZ	500 HZ	1K HZ	2K HZ	4K HZ	8K HZ		
ACCU-1	ARU-1	ON GRADE	745,000	--	95	6	--	--	55.7	115.6	480/3/60	12.1	48	79	85	89	90	90	88	84	CARRIER 48K4B	SEE REMARKS
ACCU-2	ARU-2	ON GRADE	745,000	--	95	6	--	--	55.7	115.6	480/3/60	12.1	48	79	85	89	90	90	88	84	CARRIER 48K4B	SEE REMARKS
ACCU-3	ARU-3	ON GRADE	745,000	--	95	6	--	--	55.7	115.6	480/3/60	12.1	48	79	85	89	90	90	88	84	CARRIER 48K4B	SEE REMARKS

REMARKS:

1. PROVIDE UNIT WITH SINGLE POINT POWER CONNECTION WITH NEMA 3R DISCONNECT.

NOT FOR CONSTRUCTION

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PROJECT
OLD EVERETT HIGH SCHOOL - TASK 5
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CLIENT
CITY OF EVERETT, MA

CONSULANTS

REGISTRATION

Issue Date

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ISSUE / REVISION

#	Date	Description

PROJECT NUMBER
BEMS26

SHEET TITLE
MECHANICAL SCHEDULES

SHEET NUMBER
M-400

PLOTTED: 2/7/2025 10:08:47 AM
Autodesk Docs://Old Everett HS - Task 5 Revised/REVISED_MEP_25.rvt

ABBREVIATIONS

A	AMPERE
AFCI	ARC-FAULT CIRCUIT INTERRUPTOR
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AIC	AMPERE INTERRUPTING CURRENT
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIO VISUAL
AWG	AMERICAN WIRE GAUGE
CATV	COMMUNITY ANTENNA TELEVISION
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CO/ALR	COPPER-ALUMINUM, REVISED
COPS	CRITICAL OPERATIONS POWER SYSTEMS
CR	CARD READER
CSA	CANADIAN STANDARDS ASSOCIATION
CU	COPPER
DIA	DIAMETER
DOCA	DESIGNATED CRITICAL OPERATIONS AREAS
DS	DISCONNECT SWITCH
EC	ELECTRICAL CONTRACTOR
EGC	EQUIPMENT GROUNDING CONDUCTOR
EM	EMERGENCY
EMF	ELECTROMOTIVE FORCE
EMT	ELECTRICAL METALLIC TUBING
ENT	ELECTRICAL NONMETALLIC TUBING
EPO	EMERGENCY POWER OFF
ES	ENERGY STORAGE SYSTEM
EV	ELECTRICAL VEHICLE
EVPE	ELECTRICAL VEHICLE POWER EXPORT EQUIPMENT
EVSE	ELECTRICAL VEHICLE SUPPLY EQUIPMENT
F	FUSE
FLA	FULL-LOAD AMPERES
FMC	FLEXIBLE METAL CONDUIT
FMT	FLEXIBLE METAL TUBING
FT	FEET
FURN.	FURNISHED
GC	GENERAL CONTRACTOR
GEC	GROUNDING ELECTRODE CONDUCTOR
GF	GROUND FAULT
GFCI	GROUND-FAULT INTERRUPTER
GFPE	GROUND-FAULT CIRCUIT INTERRUPTER
GFPE	GROUND-FAULT PROTECTION OF EQUIPMENT
GND	GROUND
HDPE	HIGH DENSITY POLYETHYLENE
HGT.	HEIGHT
HID	HIGH INTENSITY DISCHARGE
HOA	HAND, OFF, AUTOMATIC SWITCH
HP	HORSEPOWER
Hz	HERTZ (CYCLE PER SECOND)
IAEI	INTERNATIONAL ASSOCIATIONS OF ELECTRICAL INSPECTORS
IBT	INTERSYSTEM BONDING TERMINATION
IEC	INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEEE	INSTITUTE OF ELECTRICAL ELECTRONICS ENGINEERS
IG	ISOLATED GROUND
IMC	INTERMEDIATE METAL CONDUIT
IS	INTRINSICALLY SAFE
ITE	INFORMATION TECHNOLOGY EQUIPMENT
JB	JUNCTION BOX
KCMIL	ONE THOUSAND CIRCULAR MILS
KVA	KILOVOLT-AMPERES
KVAR	KILOVOLT-AMPERES REACTIVE
KW	KILWATTS
LCDI	LEAKAGE - CURRENT DETECTOR - INTERRUPTER
LED	LIGHT-EMITTING DIODE
LFMC	LIQUIDTIGHT FLEXIBLE METAL CONDUIT
LFNC	LIQUIDTIGHT FLEXIBLE NON-METALLIC CONDUIT
LISW	LOAD INTERRUPTER SWITCH
LNG	LIQUIFIED NATURAL GAS
LP-GAS	LIQUIFIED PETROLEUM GAS
LRC	LOCKED-ROTOR CURRENT
MC	MECHANICAL CONTRACTOR
MCB	MAIN CIRCUIT BREAKER
MFR.	MANUFACTURER
MG SET	MOTOR-GENERATOR SET
MISC	MISCELLANEOUS
MILO	MAIN LUG ONLY
MSHA	MINE SAFTEY AND HEALTH ADMINISTRATION
MTD	MOUNTED
MW	MEGAWATTS
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NECA	NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NESC	NATIONAL ELECTRICAL SAFTEY CODE
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NIU	NETWORK INTERFACE UNIT
NO	NORMALLY OPEN
NPT	NATIONAL (AMERICAN) STANDARD PIPE TAPER
NRTL	NATIONALLY RECOGNIZED TESTING LABORATORIES
NTS	NOT TO SCALE
NUCC	NONMETALLIC UNDERGROUND CONDUIT WITH CONDUCTORS
OCPD	OVERCURRENT PROTECTIVE DEVICE
ONT	OPTICAL NETWORK TERMINAL
P	POLE
PB	PULLBOX OR PUSHBUTTON
PCS	POWER CONVERSION SYSTEM
PCU	POWER-CONDITIONING UNIT
PE	POLYETHYLENE
PF	POWER FACTOR
PHEV	PLUG-IN HYBRID ELECTRIC VEHICLE
PLC	PROGRAMMABLE LOGIC CONTROLLERS
PLFA	POWER-LIMITED FIRE ALARM
PNL	PANEL
PoE	POWER OF ETHERNET
PWR	POWER
RMC	RIGID METAL CONDUIT
RMS	ROOT MEAN SQUARE
RNC	RIGID NONMETALLIC CONDUIT
RPM	REVOLUTIONS PER MINUTE
RTRC	REINFORCED THERMOSETTING RESIN CONDUIT
SCR	SUPERVISORY CONTROLLED RECTIFIER
SP	SPARE
SPD	SURGE-PROTECTIVE DEVICE
SW	SWITCH
SWD	SWITCHING DUTY
SYM	SYMMETRICAL
T	TRANSFORMER
TEFC	TOTALLY ENCLOSED FAN-COOLED
TEMP	TEMPERATURE
TMCB	THERMAL MAGNETIC CIRCUIT BREAKER
TR	TAMPER-RESISTANT
TV	TELEVISION
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP.	TYPICAL
UL	UNDERWRITERS LABORTORIES
UPS	UNINTERRUPTIBLE POWER SUPPLY
USB	UNIVERSAL SERIAL BUS
V	VOLT
VA	VOLT-AMPERE
VAC	VOLTS ALTERNATING CURRENT
VAR	VOLT-AMPERE REACTIVE
VDC	VOLTS DIRECT CURRENT
VFD	VARIABLE FREQUENCY DRIVE
VT	VOLTAGE TRANSFORMER
VOM	VOLT-OHM-MULTIMETER
W	WIRE
W-hr	WATT-HOUR
WP	WEATHER-PROOF
WPT	WIRELESS POWER TRANSFORMER
WPTE	WIRELESS POWER TRANSFORMER EQUIPMENT
WR	WEATHER RESISTANT
Δ	DELTA
Y	WYE
ϕ	PHASE

DESCRIPTION	MOUNTING HEIGHT	SYMBOL
LIGHTING CONTROLS		
LIGHTSWITCH: LOW VOLTAGE (WHEN PRESENT, # INDICATES QUANITY OF CHANNELS	46"	$ #
EXAM LIGHT SWITCH	46"	$ X
NIGHT LIGHT SWITCH WITH CONSTANT ILLUMINATED HANDLE	46"	$ N
SURGICAL LIGHT INTENSITY CONTROL	46"	$ SL
LOW VOLTAGE DIMMER SWITCH (WHEN PREDSENT, # INDICATES QUANTITY OF CHANNELS)	46"	$ D#
GRAPHIC TOUCHSCREEN CONTROL STATION	46"	$ G
LINE VOLTAGE SWITCH	46"	$ LV
LINE VOLTAGE THREE-WAY, FOUR-WAY SWITCH	46"	$ LV3 $ LV4
LINE VOLTAGE THREE-WAY, FOUR-WAY DIMMER SWITCH	46"	$ LV3D $ LV4D
KEYED SWITCH	46"	$ K
OCCUPANCY OR VACANCY SENSOR SWITCH	46"	$ OS $ VS
OCCUPANCY OR VACANCY SENSOR SWITCH WITH DIMMER	46"	$ DOS
LIGHT SWITCH FOR UNDER-CABINET LIGHTS	46"	$ U
ILLUMINATED HANDLE LIGHT SWITCH (ILLUMINATED WHEN LOAD IS OFF)	46"	$ IL
PILOT LIGHT SWITCH (ILLUMINATED WHEN LOAD IS ON)	46"	$ PL
TIMER SWITCH	46"	$ T
OCCUPANCY OR VACANCY SENSOR, CEILING MOUNT	CLG	OS VS
OCCUPANCY SENSOR, CEILING MOUNT	CLG	OS
DAYLIGHT SENSOR	AS NOTED	DS
PHOTOCELL	AS NOTED	PC
LIGHTING RELAY	AS NOTED	LR
EMERGENCY AUTOMATIC TRANSFER SWITCH FOR LIGHTING CONTROLS (REFER TO DETAIL)	CLG	ER
POWER OUTLETS		
SIMPLEX RECEPTACLE (WHERE PRESENT, TEXT INDICATES RECEPTACLE TYPE)	1'-6"	
DUPLEX RECEPTACLE	1'-6"	
SLASH THROUGH ANY DEVICE INDICATES MOUNTING ABOVE COUNTERTOP 4" ABOVE BACKSPLASH (WHERE PRESENT, TEXT INDICATES RECEPTACLE TYPE)		
"G" INDICATES INTERGRAL GROUND FAULT PROTECTION (GFCI)	1'-6"	
DEAD FRONT GFCI DEVICE, LABEL AND INSTALL IN READILY ACCESSIBLE LOCATION		
DUPLEX RECEPTACLE WITH TWO INTEGRAL USB PORTS	1'-6"	
USB CHARGING OUTLET WITH FOUR INTEGRAL USB PORTS	1'-6"	
GANG RECPTACLE IN COMBINATION WITH SWITCH (PROVIDE DIVIDER IF LIGHTNING CIRCUIT IS 277V)	46"	CS
DUPLEX RECEPTACLE, CEILING MOUNTED	CLG	
QUADRUPLEX RECEPTACLE	1'-6"	
JUNCTION BOX, CEILING OR WALL		
VOLTAGE/2 POLE RECEPTACLE, TEXT INDICATE NEMA TYPE	1'-6"	
VOLTAGE/3 POLE RECEPTACLE, TEXT INDICATE NEMA TYPE	1'-6"	
"T" INDICATE SAFETY TYPE, TEAMPER RESISTANT OUTLET(S)		
SS INDICATES SURGE SUPPRESSION TYPE OUTLET		
GROUND FAULT PROTECTED DUPLEX WITH WEATHER-PROOF "WHILE IN USE" TYPE DIE-CAST METAL COVERPLATE WITH LOCKABLE ENCLOSURE AT OUTLET - SEE SPECIFICATIONS	2'-2"	WP
DUPLEX FOR ELECTRIC WATER COOLER: COORDINATE EXACT LOCATION WITH PLUMBING CONTRACTOR TO CONCEAL OUTLET BEHIND COOLER, PROVIDE READILY ACCESSIBLE GFI DEVICES AT 18" ADJACENT TO WATER COOLER		EWC
FULLY CONTROLLED PLUG LOAD DUPLEX / QUAD RECPTACLE		
BOX ON ANY DEVICE INDICATES SURFACE MOUNTED BACKBOX / WIREMOLD		
CIRCLE ON ANY DEVICE INDICATES DEVICE FED FROM STUB UP CONDUIT		
SPECIAL OUTLETS		
FLOORBOX, AS SCHEDULED	FLOOR	FBX
POKE-THRU, AS SCHEDULED	FLOOR	PT
WALLBOX, AS SCHEDULED	WALL	WBX
AUDIO SYSTEM OUTLET WITH DUPLEX RECEPTACLE, REFER TO DETAILS FOR ADDITIONAL INFORMATION	1'-6"	AV
COMBINATION POWER AND DATA OUTLET LOCATION, REFER TO DETAILS FOR ADDITIONAL INFORMATION	1'-6"	
COMBINATION POWER AND DATA OUTLET LOCATION, GFCI DUPLEX RECEPTACLE, REFER TO ASSOCIATED DETAIL FOR ADDITIONAL INFORMATION	1'-6"	
OVERHEAD PROJECTOR: PROVIDE DUPLEX RECEPTACLE, ONE DATA, HDMI, 3.5mm AUDIO, AND VGA OUTLET ON (3) PLATES	CLG	
SPECIAL VIDEO SYSTEM SIGNAL INPUT		-NA-
SURFACE PLUG-MOLD		
SURFACE WIRE-MOLD		
POWER POLE AS NOTED		PP

DESCRIPTION	MOUNTING HEIGHT	SYMBOL
ONE-LINE LEGEND		
FUSE		
FUSE/UNFUSED DISCONNECT		
CIRCUIT BREAKER - MOLDED CASE "AF" DENOTES AMPERE FRAME SIZE "AT" DENOTES AMPERE TRIP SETTINGS		#AF/#AT
CIRCUIT BREAKER - MOLDED CASE "AF" DENOTES AMPERE FRAME SIZE "AT" DENOTES AMPERE TRIP SETTINGS		#AF/#AT
ENCLOSED CIRCUIT BREAKER - MOLDED CASE "AF" DENOTES AMPERE FRAME SIZE "AT" DENOTES AMPERE TRIP SETTINGS		#AF/#AT
AUTOMATIC TRANSFER SWITCH "ATS"		ATS TS1 100A
TRANSFORMER		TRANSFORMER T# ## kVA
PANELBOARD		PANEL P1 NORMAL 208Y/120V/3Ø/4W 100A
RISER GENERATOR		GENERATOR GEN1 480Y/277V/3Ø/4W 750kVA/600kW
RISER SWITCHBOARD		SWITCHBOARD 480Y/277V ####A
LIGHTING FIXTURES AND EQUIPMENT		
REFER TO LUMINAIRE SCHEDULE FOR EXACT FIXTURE SPECIFICATIONS, MOUNTING HEIGHTS, ETC.		
TYPICAL SUBSCRIPTS DENOTE THE FOLLOWING: FX = LIGHT FIXTURE TYPE. REFER TO LIGHTING FIXTURE SCHEDULE FOR SPECIFICATIONS. /E = ON EMERGENCY CIRCUIT d = CONNECTED TO DAYLIGHT SENSOR Z = CONTROL ZONE # = CIRCUIT NUMBER REFER TO LIGHTING FIXTURE SCHEDULE FOR ADDITIONAL INFORMATION.		FX/E d Z #
SURFACE OR SUSPENDED CEILING FIXTURE		
RECESSED CEILING FIXTURE		
POLE MOUNTED AREA LIGHT WITH CONCRETE BASE		
LIGHTED BOLLARD WITH CONCRETE BASE		
EMERGENCY BATTERY WALL-PACK		
WALL MOUNT FIXTURE		
TRACK COMPLETE WITH POWER SUPPLES AND FIXTURE HEADS		
FLOODLIGHT		
EXIT LIGHT (CEILING, END, WALL MOUNT) WITH OR WITHOUT DIRECTIONAL ARROWS, WITH OR WITHOUT EGRESS HEADS		
STRIP FIXURE		
CROSS-HATCHING INDICATES LIGHT IS POWERED FROM EMERGENCY-CRITICAL BRANCH		
PARALLEL-HATCHING INDICATES LIGHT IS POWERED FROM THE EMERGENCY-LIFE SAFETY BRANCH		
REMOTE LIGHT FIXTURE DRIVER	AS NOTED	RD
REMOTE BATTERY BACKUP	AS NOTED	RB
CENTRAL BATTERY INVERTER	AS NOTED	INV

GENERAL SYMBOLS

TAGGED NOTE DESIGNATOR	#
REVISION TRIANGLE	1
POINT OF CONNECTION / CONNECT TO EXISTING	
POINT OF DEMOLITION	
ROOM TAG	ROOM NAME (SEE #)

DESCRIPTION	MOUNTING HEIGHT	SYMBOL
ONE-LINE LEGEND		
CONDUIT CONCEALED IN WALLS OR IN CEILING SPACE: ARROW(S) INDICATE(S) HOME RUN & # OF CUIRCUITS: HASHMARKS INDICATE # OF CONDUCTORS.		PHASE NEUTRAL GROUND #
NON-REVERSING MOTOR STARTER SNAP SWITCH	AS NOTED	$ M
MOMENTARY CONTACT SWITCH	46"	$ MC
HAND-OFF-AUTO 3-POSITION SWITCH	46"	$ HOA
DISCONNECT SWITCH	5'-0"	
MAGNETIC STARTER	5'-0"	
MAGNETIC COMBINATION STARTER	5'-0"	
VARIABLE FREQUENCY DRIVE	5'-0"	
ENCLOSED FLUSH MTD. CIRCUIT BREAKER	5'-0"	
MUSHROOM SWITCH	46"	
PUSHBUTTON STATION WITH 1,2, OR 3 BUTTONS	46"	
PANELBOARD, SURFACE OR FLUSH MOUNTED, HATCHING INDICATES EMEREGENCY	6'-6" TO TOP	
TRANSFORMER	AS NOTED	
EQUIPMENT HARDWIRE CONNECTION (SEE DETAIL)		
KITCHEN EQUIPMENT OUTLET COUPLING CONNECTION (SEE DETAIL)		
MOTOR CONNECTION, REFER TO EQUIPMENT CONNECTION SCHEDULE		
PLUMBING FIXTURE SOLENOID VALVE/ELECTRIC EYE SENSOR CONNCETION. COORDINATE EXACT CONNECTION REQUIREMENTS WITH MANUFACTURER.		
PLUMBING FIXTURE EYE TRANSFORMER CONNECTION. TRANSFORMER SHALL BE 120V-24V. MOUNT ABOVE SUSPENDED ACCESSIBLE CEILING IN J-BOX. PROVIDE ADDITIONAL TRANSFORMERS OF SAME TYPE AS/IF NEEDED		
PROVIDE CONNECTION TO HAND DRYER (SEE ARCHITECTURAL SPECIFICATIONS)	VERIFY WITH ARCHITECT	
SURGE PROTECTION DEVICE (SURFACE OR FLUSH MOUNTED)		SPD
GENERATOR ANNUNCIATOR PANEL (SURFACE OR FLUSH MOUNTED) - SEE SPECIFICATIONS	46"	GEN-A
CONDUIT UP		
CONDUIT DOWN		
FLEXIBLE CONDUIT		
GROUND BUS BAR ON INSULATED STANDOFFS	2'-0"	
BUS DUCT, AMPERAGES AS NOTED	AS SHOWN	
WIREWAY WITH REMOVABLE COVER (SIZE AS NOTED)	AS SHOWN	
TRENCH DUCT (SIZE AS NOTED)	AS SHOWN	
WIRE BASKET CABLE TRAY (SIZE AS NOTED)	AS SHOWN	
LADDER CABLE TRAY (SIZE AS NOTED)	AS SHOWN	
SOLID BOTTOM CABLE TRAY (SIZE AS NOTED)	AS SHOWN	
J-HOOK PATHWAY		
EQUIPMENT TAG, REFER TO EQUIPMENT SCHEDULE		EQUIP-#
MECHANICAL EQUIPMENT DESIGNATOR (SEE MECH. SCHEDULE)		EQUIP-#
TAGGED NOTES		
REVISION TAG		
SCHEDULE NOTE		
LINETYPE LEGEND		
EXISTING		
DEMOLISHED		
NEW		
EXISTING EQUIPMENT LEGEND		
EXISTING DEVICE TO BE REMOVED AND CIRCUIT PULLED BACK TO POINT OF ORIGIN		X
EXISTING DEVICE TO BE MAINTAINED		XM
EXISTING DEVICE TO BE RELOCATED		XTR
NEW LOCATION OF EXISTING DEVICE, EXTEND BRANCH/FEEDER CIRCUIT TO NEW LOCATION		XN
EXISTING DEVICE TO BE REWORKED		XW
ABBREVIATIONS		
UNLESS OTHERWISE NOTED		UON
OWNER FURNISHED CONTRACTOR INSTALLED		OFCI
OWNER FURNISHED OWNER INSTALLED		OFOI
CONTRACTOR FURNISHED CONTRACTOR INSTALLED		CFCI
CONTRACTOR FURNISHED OWNER INSTALLED		CFOI
INDICATES EMERGENCY POWER		EM
WIREGAURD - PROVIDE MANUFACTURER'S SPECIFIC GUARD FOR DEVICE NOTED		WG
WEATHERPROOF - NEMA-3R, WET LOCATION LISTED, PROVIDE COVERS, RATINGS, ETC, AS SUITABLE FOR OUTDOORS.		WP
EXPLOSION PROOF - PROVIDE WIRING METHODS, ENCLOSURES, RATINGS, ECT. AS SUITABLE FOR HAZARDOUS LOCATION.		XP

SHEET LIST - ELECTRICAL

SHEET #	SHEET NAME
E-001	ELECTRICAL LEGEND
E-002	ELECTRICAL SPECIFICATIONS
E-003	ELECTRICAL SPECIFICATIONS & NOTES
E-100	ELECTRICAL BASEMENT DEMOLITION PLAN
E-101	ELECTRICAL FIRST FLOOR DEMOLITION PLAN
E-200	ELECTRICAL BASEMENT POWER PLAN
E-201	ELECTRICAL FIRST FLOOR POWER PLAN
E-400	ELECTRICAL RISER DIAGRAM & SCHEDULES
E-500	ELECTRICAL DETAILS

CMTA
A LEGENCE Company
161 Worcester Road, Suite 305
Framingham, MA 01701
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PROJECT

OLD EVERETT HIGH SCHOOL - TASK 5

548 Broadway, Everett, MA 02149

CLIENT

CITY OF EVERETT, MA

CONSULANTS

REGISTRATION

Issue Date

KEYPLAN

ISSUE / REVISION

#	Date	Description

PROJECT NUMBER

BEMS26

SHEET TITLE

ELECTRICAL LEGEND

SHEET NUMBER

E-001

NOT FOR CONSTRUCTION

Autodesk Docs://Old Everett HS - Task 5 Bendetti/BEMS26_ABP_23.rvt
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PART 1 GENERAL

A. ATTENTION IS DIRECTED TO THE CONTRACT AND GENERAL CONDITIONS AND ALL SECTIONS WITH DIVISION 1 - GENERAL REQUIREMENTS, WHICH ARE HEREBY MADE A PART OF THIS SECTION OF THE SPECIFICATIONS.

B. TIME, MANNER, AND REQUIREMENTS FOR SUBMITTING TRADE-BIDS:
1. TRADE CONTRACTOR BIDS FOR WORK UNDER THIS SECTION SHALL BE FOR THE COMPLETE WORK AND SHALL BE FILED IN A SEALED ENVELOPE WITH THE AWARDING AUTHORITY AT A TIME AND PLACE AS STIPULATED IN THE "NOTICE TO CONTRACTORS".
THE FOLLOWING SHALL APPEAR ON THE UPPER LEFT HAND CORNER OF THE ENVELOPE.
NAME OF TRADE CONTRACT BIDDER:\- ______________________
TRADE CONTRACTOR BID FOR SECTION: ______________________
2. EVERY TRADE CONTRACTOR BIDDER MUST BE CERTIFIED BY THE DIVISION OF CAPITAL ASSET MANAGEMENT FOR THE DOLLAR AMOUNT OF THEIR BID. TRADE BIDS WILL BE VALID ONLY WHEN ACCOMPANIED BY A CERTIFICATE OF ELIGIBILITY AND AN UPDATE STATEMENT.
3. EACH TRADE CONTRACTOR BID SUBMITTED FOR WORK UNDER THIS SECTION SHALL BE ON FORMS FURNISHED BY THE AWARDING AUTHORITY AS REQUIRED BY SECTION 44F OF CHAPTER 149 OF THE GENERAL LAWS, AS AMENDED. SUB-BID FORMS ARE ATTACHED TO THIS DOCUMENT.
4. TRADE BIDS FILED WITH THE AWARDING AUTHORITY SHALL BE ACCOMPANIED BY A BID BOND OR CASH OR CERTIFIED CHECK OR A TREASURER'S OR CASHIER'S CHECK ISSUED BY A RESPONSIBLE BANK OR TRUST COMPANY PAYABLE TO THE TOWN OF EVERETT IN THE AMOUNT OF 5 PERCENT OF THE BID. A TRADE CONTRACTOR BID ACCOMPANIED BY ANY OTHER FORM OF BID DEPOSIT THAN THOSE SPECIFIED WILL BE REJECTED.

C. CAREFULLY EXAMINE ALL THE CONTRACT DOCUMENTS FOR REQUIREMENTS WHICH AFFECT THE WORK OF THIS SECTION. THE EXACT SCOPE OF THIS SECTION CANNOT BE DETERMINED WITHOUT A THOROUGH REVIEW OF ALL SPECIFICATION SECTIONS AND OTHER CONTRACT DOCUMENTS.

D. WHERE REFERRED TO, STANDARD SPECIFICATIONS, RECOMMENDATIONS OF TECHNICAL SOCIETIES, AND/OR MANUFACTURER'S ASSOCIATIONS, PLUS CODES OF FEDERAL, STATE, AND LOCAL AGENCIES SHALL INCLUDE ALL AMENDMENTS CURRENT AS OF DATE OF ISSUE OF THESE SPECIFICATIONS.

E. SUB-SUB-BID REQUIREMENTS:
1. SUB-SUB BIDS ARE REQUIRED FOR THIS SECTION. SUB-BIDDERS SHALL INCLUDE THE APPROPRIATE INFORMATION FOR THE LIST OF SUB SUB-BID CLASS OF WORK NOTED BELOW IN THIS PARAGRAPH. NONE
2. IF THE FILED SUB-BIDDER CUSTOMARILY PERFORMS THE ABOVE WORK WITH ITS OWN WORKFORCE, THE SUB-BIDDER SHOULD LIST ITS OWN NAME AND TRADE AND LEAVE THE DOLLAR AMOUNT BLANK.
3. IF THE FILED SUB-BIDDER DOES NOT CUSTOMARILY PERFORM THE CLASSES OF WORK WITH ITS OWN WORKFORCE, THE SUB-BIDDER SHOULD LIST THE NAME OF THE CONTRACTOR PERFORMING THE WORK, THE TRADE AND INSERT A DOLLAR AMOUNT.

1.02 GENERAL REQUIREMENTS

A. SUB-BIDS SHALL BE SUBMITTED IN ACCORDANCE WITH THE PROVISIONS OF MASS GENERAL LAWS (TER. ED.) CHAPTER 149, SECTIONS 44A-44I, INCLUSIVE AS AMENDED. THE TIME AND PLACE OF SUBMISSION OF SUB-BIDS SHALL BE AS SET FORTH IN THE INSTRUCTIONS TO BIDDERS.

B. EACH SUB-BID FILED WITH THE AWARDING AUTHORITY MUST E ACCOMPANIED BY BID BOND, OR CASH OR CERTIFIED CHECK OR A TREASURER'S CHECK OR CASHIERS'S CHECK ISSUED BY A RESPONSIBLE BANK OR TRUST COMPANY, PAYABLE TO THE TOWN OF EVERETT IN THE AMOUNT OF FIVE PERCENT (5%) OF THE BID AMOUNT. A SUB-BID ACCOMPANIED BY ANY OTHER FORM OF BID DEPOSIT WILL BE REJECTED.

C. EACH SUB-BID, SUBMITTED FOR THE WORK OF THIS SECTION, SHALL BE ON A FORM FURNISHED BY THE AWARDING AUTHORITY, AS REQUIRED BY SECTION 44F OF CHAPTER 149, AS AMENDED.

D. REFERENCE DRAWINGS: REFER TO THE LIST OF DRAWINGS BOUND IN THE FRONT OF THIS SPECIFICATION.

E. THE FOLLOWING SPECIFICATIONS SECTIONS SHALL BE PART OF THIS FILE SUB-BID SECTION:
DIVISION 26 - ELECTRICAL
26 0000 - ELECTRICAL

F. THE WORK OF THIS SECTION IS SHOWN ON DRAWINGS:

E-001	ELECTRICAL LEGEND
E-100	ELECTRICAL BASEMENT DEMOLITION PLAN
E-101	ELECTRICAL FIRST FLOOR DEMOLITION PLAN
E-200	ELECTRICAL BASEMENT POWER PLAN
E-201	ELECTRICAL FIRST FLOOR POWER PLAN
E-400	ELECTRICAL RISER DIAGRAM & SCHEDULES
E-500	ELECTRICAL DETAILS

G. THE TRADE CONTRACTOR'S ATTENTION IS DIRECTED TO THE GENERAL CONDITIONS. THIS TRADE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR ALL PERMITS AND INSPECTIONS REQUIRED TO COMPLETE ALL WORK DESCRIBED IN THIS SECTION.

1.1 GENERAL REQUIREMENTS

A. THE CONTRACTOR AFFIRMS BY SUBMITTING HIS BID THAT HE HAS CAREFULLY EXAMINED THE SITE AND ALL CONDITIONS AFFECTING WORK UNDER THIS SECTION. NO CLAIMS FOR ADDITIONAL EXISTING CONDITIONS WILL BE HONORED.

B. EXAMINE ALL OTHER SECTIONS OF THE SPECIFICATIONS, GENERAL CONDITIONS, AND SUPPLEMENTARY GENERAL CONDITIONS FOR REQUIREMENTS WHICH AFFECT WORK UNDER THIS SECTION, WHETHER OR NOT SUCH WORK IS SPECIFICALLY MENTIONED IN THIS SECTION.

C. COORDINATE WORK WITH THAT OF ALL OTHER TRADES AFFECTING OR AFFECTED BY WORK OF THIS SECTION. COOPERATE WITH SUCH TRADES TO ASSURE THE STEADY PROGRESS OF ALL WORK UNDER THE CONTRACT.

D. FURNISH ALL TOOLS, MACHINERY, EQUIPMENT, SCAFFOLDING, APPURTENANCES AND APPLIANCES NECESSARY FOR THE SATISFACTORY HANDLING AND EXECUTION OF THE WORK.

E. THE CONTRACTOR SHALL PROVIDE ALL ITEMS, ARTICLES, MATERIALS OPERATIONS OR METHODS LISTED, MENTIONED, OR SCHEDULED ON THE DRAWINGS AND/OR METHODS LISTED, MENTIONED, LABOR SUPERVISOR MATERIALS, EQUIPMENT AND INCIDENTALS NECESSARY AND REQUIRED FOR THEIR COMPLETION.

F. DRAWINGS AND SPECIFICATIONS SHALL BE TAKEN TOGETHER; PROVIDE AS THOUGH MENTIONED IN BOTH, WORK SPECIFIED AND NOT SHOWN, OR WORK SHOWN AND NOT SPECIFIED. ALTHOUGH SUCH WORK IS NOT SPECIFICALLY SHOWN OR SPECIFIED, PROVIDE AS PART OF THIS WORK ALL SUPPLEMENTARY AND MISCELLANEOUS ITEMS, APPURTENANCES, DEVICES OR MATERIALS INCIDENTAL TO OR NECESSARY FOR A SOUND, SECURE AND COMPLETE INSTALLATION.

G. THE WORD "CONTRACTOR" AS USED IN THE "ELECTRICAL WORK" SHALL MEAN THE ELECTRICAL SUBCONTRACTOR.

1.2 SCOPE OF WORK

A. THE WORK COVERED BY THIS SECTION OF THE SPECIFICATIONS CONSISTS OF THE FURNISHING OF ALL LABOR, MATERIALS, APPLIANCES, EQUIPMENT, TOOLS, TRANSPORTATION, SUPERVISION, AND SERVICES REQUIRED TO FURNISH AND INSTALL COMPLETELY TESTED AND OPERATIVE, ALL ELECTRICAL WORK IN ACCORDANCE WITH THESE SPECIFICATIONS AND THE APPLICABLE DRAWINGS INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:
1. CABLE AND TERMINATIONS.
2. DEVICE AND DEVICE PLATES.
3. NEW CIRCUIT BREAKERS.
4. CONDUIT, WIRE, BOXES, FITTINGS, HANGERS AND SUPPORTS.
5. PANELBOARDS.
6. GROUNDING.
7. SEAL ALL ELECTRICAL PENETRATIONS WITH FIRE-RETARDANT MATERIAL.
8. BRANCH CIRCUIT WIRING AND CONNECTIONS FOR NEW MECHANICAL EQUIPMENT.
9. OBTAIN ALL PERMITS AND PAY ASSOCIATED FEES.

1.3 RELATED WORK

A. HVAC EQUIPMENT INCLUDING CONTROL WIRING. ALL CONTROL WIRING SHALL BE BY ATC SUB-CONTRACTOR.

1.4 CODES, RULES, PERMITS AND FEES

A. GIVE NECESSARY NOTICES, OBTAIN PERMITS, OTHER COSTS IN CONNECTION WITH WORK; FILE NECESSARY PLANS, PREPARE DOCUMENTS, OBTAIN REQUIRED APPROVALS OF GOVERNMENTAL DEPARTMENTS HAVING JURISDICTION; OBTAIN REQUIRED CERTIFICATES OF INSPECTION FOR WORK, DELIVER SAME TO ENGINEER BEFORE REQUEST FOR FINAL PAYMENT FOR WORK.

B. INCLUDE IN WORK, WITHOUT EXTRA COST, ANY MINOR CHANGES FROM THE CONTRACT DOCUMENTS REQUIRED IN ORDER TO COMPLY WITH APPLICABLE LAWS, ORDINANCES, RULES AND REGULATIONS. THE CONTRACTOR WILL BE REIMBURSED FOR ANY MAJOR CHANGES REQUIRED.

C. MATERIALS FURNISHED, WORK INSTALLED SHALL COMPLY WITH RULES, RECOMMENDATIONS OF NFPA, REQUIREMENTS OF LOCAL AUTHORITIES HAVING JURISDICTION (AHJ), RECOMMENDATIONS OF FIRE INSURANCE RATING ORGANIZATION HAVING JURISDICTION, REQUIREMENTS OF GOVERNMENTAL DEPARTMENTS HAVING JURISDICTION.

D. ANY CHANGES REQUIRED IN THE INTENT OF DRAWINGS AND SPECIFICATIONS BY ANY PROPERLY AUTHORIZED INSPECTION AGENCY SHALL BE BROUGHT TO ENGINEER'S ATTENTION FOR REVIEW.

1.5 MATERIALS

A. ALL MATERIALS AND EQUIPMENT REQUIRED FOR WORK SHALL BE NEW AND OF FIRST CLASS QUALITY.

B. EQUIPMENT AND MATERIAL OF SAME TYPE OF CLASSIFICATION USED FOR SAME PURPOSE SHALL BE OF THE SAME MANUFACTURER.

C. EQUIPMENT ACCESSORIES NOT SPECIFICALLY DESCRIBED OR IDENTIFIED BY MANUFACTURER'S CATALOG NUMBERS SHALL CONFORM TO NEMA OR OTHER APPLICABLE TECHNICAL STANDARDS AND BE SUITABLE FOR MAXIMUM WORKING VOLTAGE AND CURRENT AS INDICATED.

D. ALL MATERIALS, EQUIPMENT AND DEVICES SHALL BE LISTED BY UNDERWRITERS LABORATORIES, INC. (UL) AND SO LABELED.

1.6 DRAWINGS AND SPECIFICATIONS

A. THE ELECTRICAL DRAWINGS ARE GENERALLY DIAGRAMMATIC BUT SHALL BE FOLLOWED AS CLOSE AS ACTUAL CONSTRUCTION, AND WORK OF OTHER CONTRACTORS WILL PERMIT. ALL DEVIATIONS FROM DRAWINGS REQUIRED TO MAKE THE WORK OF THE ELECTRICAL CONTRACTOR CONFORM TO THE BUILDING AS CONSTRUCTED, AND TO THE WORK OF OTHER CONTRACTORS, SHALL BE MADE BY THE ELECTRICAL CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL FIELD VERIFY ALL MEASUREMENTS AT THE BUILDING AND SHALL BE RESPONSIBLE FOR THE CORRECTNESS OF SAME. NO EXTRA COMPENSATION WILL BE ALLOWED BECAUSE OF DIFFERENCES BETWEEN WORK SHOWN ON THE DRAWINGS AND MEASUREMENTS AT THE BUILDING.

B. THE DATA GIVEN HEREIN AND ON THE DRAWINGS ARE AS EXACT AS COULD BE SECURED, BUT THEIR ABSOLUTE ACCURACY IS NOT GUARANTEED. THE SPECIFICATIONS AND DRAWINGS ARE FOR THE ASSISTANCE AND GUIDANCE OF THE CONTRACTOR. EXACT LOCATIONS, DISTANCES, LEVELS, ETC. WILL BE GOVERNED BY THE BUILDING, AND THE CONTRACTOR SHALL USE THE DATA CONTAINED WITH THIS UNDERSTANDING.

C. THE ELECTRICAL CONTRACTOR SHALL PERSONALLY, OR THROUGH AN AUTHORIZED AND COMPETENT REPRESENTATIVE, CONSTANTLY SUPERVISE THE WORK COVERED BY THESE SPECIFICATIONS; AND SO FAR AS POSSIBLE, SHALL KEEP THE SAME FOREMAN ON THE JOB FROM START TO FINISH. THE WORKMANSHIP OF THE ENTIRE JOB SHALL BE FIRST CLASS IN EVERY WAY, AND ONLY EXPERIENCED AND COMPETENT WORKMEN SHALL BE EMPLOYED FOR THE WORK.

D. THE ELECTRICAL CONTRACTOR SHALL COOPERATE WITH OTHER CONTRACTORS DOING WORK ON THE BUILDING AS MAY BE NECESSARY FOR THE PROPER EXECUTION OF THE WORK OF THE VARIOUS TRADES EMPLOYED IN THE CONSTRUCTION OF THE PROJECT. THE ELECTRICAL CONTRACTOR SHALL REFER TO THE MECHANICAL DRAWINGS FOR CONSTRUCTION DETAILS, AND SHALL COORDINATE HIS WORK WITH THAT OF THE OTHER CONTRACTORS TO THE END SO THAT UNNECESSARY DELAYS MAY BE AVOIDED.

1.7 GUARANTEE

A. GUARANTEE BY ACCEPTANCE OF CONTRACT, THAT WORK INSTALLED WILL BE FREE FROM DEFECTS IN WORKMANSHIP AND THAT MATERIALS AND APPARATUS WILL FUNCTION WITHIN THE CAPACITIES AND CHARACTERISTICS SPECIFIED. IF, DURING PERIOD OF ONE YEAR, OR AS OTHERWISE SPECIFIED, FROM DATE OF CERTIFICATE OF ACCEPTANCE OF WORK, ANY SUCH DEFECTS IN WORKMANSHIP, MATERIAL OR PERFORMANCE APPEAR, SUCH DEFECTS SHALL BE CORRECTED WITHIN REASONABLE TIME AS SPECIFIED IN NOTICE FROM THE ENGINEER. IN DEFAULT THEREOF, THE OWNER MAY HAVE SUCH WORK DONE AND CHARGE THE COST TO THE CONTRACTOR.

1.8 SHOP DRAWINGS

A. SHOP DRAWINGS SHALL BE SUBMITTED FOR THE FOLLOWING ITEMS OF EQUIPMENT:
1. DEVICES.
2. CONDUIT, WIRE, AC CABLE, MC CABLE.
3. CIRCUIT BREAKERS.
4. FUSES.
5. PANELBOARDS.
6. FIRE RETARDANT MATERIAL.

1.9 PROJECT CLOSE-OUT

A. PROVIDE THE FOLLOWING DOCUMENTS FOR REVIEW AND APPROVAL FOR PROJECT CLOSE-OUT:
1. RECORD OF COMPLETION AS-BUILTS
2. O&M MANUALS
3. TEST REPORTS

PART 2 PRODUCTS

2.1 MATERIALS

A. GENERAL
1. ALL EQUIPMENT AND MATERIAL FOR PERMANENT INSTALLATION SHALL BE NEW UNLESS SPECIFICALLY INDICATED OTHERWISE. IN ADDITION, MATERIAL SHALL:
(A) BE WITHOUT BLEMISH OR DEFECT.
(B) NOT BE USED FOR TEMPORARY POWER OR LIGHTING WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE OWNER.
(C) BE IN ACCORDANCE WITH NEMA STANDARDS.
(D) BEAR UL LABEL WHERE SUBJECT TO UL LABEL SERVICE.

B. FIRE STOPPING MATERIAL
1. FIRE STOPPING MATERIALS SHALL CONSIST OF COMMERCIALLY MANUFACTURED PRODUCTS CAPABLE OF PASSING ASTM E-814 (UL 1479).
2. FIRE STOPPING MATERIALS SHALL MAINTAIN THE RATING OF THE WALL, PARTITION OR FLOOR OPENING THAT PENETRATION IS MADE.
3. FIRE STOPPING MATERIALS SHALL BE UL CLASSIFIED.
4. ACCEPTABLE PRODUCTS
(A) 3M: FIRE BARRIER
(B) THOMAS & BETTS: FLAME SAFE
(C) NELSON ELECTRIC: FLAMESEAL

2.2 WIRE AND CABLE - 600 VOLT

A. ALL WIRING SHALL BE TYPE THHN-THWN, 600V INSULATION, RATED 90 DEGREE CELSIUS. CONDUCTORS SHALL BE SOFT ANNEALED COPPER WITH MINIMUM CONDUCTIVITY OF 98%. THE JACKET SHALL BE ABRASION, MOISTURE, GASOLINE AND OIL RESISTANT NYLON. ALL WIRING SHALL BE UL LISTED AND CONFORM TO THE NEC FOR CONSTRUCTION AND USE.

B. WIRING INSULATION SHALL BE COLOR CODED PER OWNERS STANDARDS. WHERE NO COLOR CODE IS PRESENT OR, THE FOLLOWING SHALL BE UTILIZED:
1. 208/120V / 3-PHASE
(A) PHASE A: BLACK
(B) PHASE B: RED
(C) PHASE C: BLUE
(D) D) NEUTRAL: WHITE
(E) GROUND: GREEN
2. 480/277V/3 PHASE
(A) PHASE A: BROWN
(B) PHASE B: ORANGE
(C) PHASE C: YELLOW
(D) NEUTRAL: GRAY
(E) GROUND: GREEN

C. ALL WIRE AND CABLE SHALL BE AS MANUFACTURED BY SOUTHWIRE, ANACONDA, ALLIED OR EQUAL.

D. MINIMUM SIZE WIRE FOR BRANCH CIRCUIT AND POWER WIRING SHALL BE #12 AWG. FOR 120V, 20A BRANCH CIRCUIT RUNS EXCEEDING 75'-0" AND 175'-0" IN LENGTH FOR 277V, THE BRANCH CIRCUIT RUN SHALL BE #10 AWG OR LARGER.

E. ALL WIRING SHALL BE INSTALLED PER MANUFACTURERS PUBLISHED INSTALLATION INSTRUCTIONS. ALL BENDS SHALL BE MADE SO AS NOT TO DAMAGE THE CABLE.

F. CONDUCTORS #10 AND #12 AWG SHALL BE CONNECTED WITH PREINSULATED SPRING CONNECTORS INCASED IN A STEEL SHELL AND MINIMUM RATED AT 105C. A MINIMUM OF 3/8" SKIRT SHALL COVER THE BARE WIRES. THE CONNECTOR SHALL MEET WITH UL APPROVAL FOR FIXTURE AND PRESSURE WORK. CONNECTORS SHALL BE MANUFACTURED BY BUCHANAN, IDEAL, 3M COMPANY OR APPROVED EQUAL.

2.3 DISCONNECTS AND CIRCUIT BREAKERS

A. CIRCUIT DISCONNECT SWITCHES
1. FURNISH AND INSTALL DISCONNECT SWITCHES FOR DISCONNECTING MEANS FOR ALL EQUIPMENT AS SHOWN ON DRAWINGS. DISCONNECT SWITCHES SHALL BE OF THE TYPE "A", QUICK-MAKE, QUICK-BREAK HEAVY DUTY CONSTRUCTION. DISCONNECT SWITCHES SHALL HAVE INTERLOCKING DOORS. CABINETS SHALL BE BONDERIZED AND FINISHED IN GRAY ENAMEL. WHERE (1) FEEDER SUPPLIES MORE THAN (1) PIECE OF EQUIPMENT, DISCONNECTING SWITCHES SHALL BE OF THE FUSIBLE TYPE AND SHALL BE COMPLETE WITH FUSES OF THE SIZE REQUIRED FOR EACH LOAD. NEMA TYPE 3R ENCLOSURES SHALL BE USED WHERE THE DISCONNECT SWITCH IS EXPOSED TO THE WEATHER OR IN WET AREAS.
2. DISCONNECT DEVICES SHALL BE ONE OF THE FOLLOWING MANUFACTURERS: EATON CUTLER-HAMMER, GENERAL ELECTRIC OR SQUARE D.
3. ALL EQUIPMENT SHALL BE PROVIDED WITH THE PROPER SIZE/RATING DISCONNECT SWITCH WHETHER INDICATED ON THE DRAWINGS OR NOT TO COMPLY WITH NEC. ALSO, INSTALL AND CONNECT DISCONNECT SWITCHES FURNISHED BY OTHER TRADES.
4. ALL POWER WIRING SHALL BE FURNISHED AND INSTALLED BETWEEN DISCONNECT SWITCHES, CONTROL CABINETS, CONTACTORS, AND EQUIPMENT TERMINALS REQUIRED BY EQUIPMENT FURNISHED BY OTHER TRADES.
5. FUSES FOR FUSED DISCONNECT SWITCHES SHALL BE THE REJECTION TYPE. FUSES SHALL BE SIZED IN ACCORDANCE WITH NEC.

B. MOTOR DISCONNECT SWITCHES
1. ALL MOTOR DISCONNECT DEVICES SHOWN ON THE DRAWINGS SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.
2. FURNISH AND INSTALL DISCONNECT SWITCHES FOR DISCONNECTING MEANS FOR ALL MOTORS AS SHOWN ON DRAWINGS. DISCONNECT SWITCHES SHALL BE OF THE TYPE "A", QUICK-MAKE, QUICK-BREAK HEAVY DUTY CONSTRUCTION SIZED FOR THE HORSEPOWER OF THE MOTOR SERVED. DISCONNECT SWITCHES SHALL HAVE INTERLOCKING DOORS. CABINETS SHALL BE BONDERIZED AND FINISHED IN GRAY ENAMEL. NEMA, TYPE 3R ENCLOSURES SHALL BE USED WHERE THE DISCONNECT SWITCH IS EXPOSED TO THE WEATHER OR IN WET AREAS.
3. FURNISH AND INSTALL MANUAL STARTING THERMAL-OVERLOAD TYPE SWITCH WITH PILOT LIGHT AS A DISCONNECTING MEANS FOR ALL MOTORS UNDER 0.5 HP, UNLESS OTHERWISE INDICATED ON THE PLANS. THESE THERMAL SWITCHES SHALL BE TOGGLE OPERATED AND SHALL BE RATED 1 HP, MOTOR OVERLOAD PROTECTION SHALL BE INTERCHANGEABLE HEATERS. HEATERS SHALL BE INSTALLED WITHOUT REMOVING THE STARTER FROM THE HOUSING OR DISTURBING THE WIRING. TOGGLE SHALL BE TRIP-FREE. THERMAL SWITCHES SHALL BE FURNISHED IN A NEMA, TYPE 1 ENCLOSURE IN MECHANICAL AND UTILITY AREAS AND FLUSH IN WALLS WITH STAINLESS STEEL PLATES IN ARCHITECTURALLY FINISHED AREAS. ALL HEATERS SHALL BE SIZED PER THE HP OF THE MOTOR CODE LETTER. COORDINATE WITH HVAC AND PLUMBING TRADES.
4. ALL POWER WIRING SHALL BE FURNISHED AND INSTALLED BETWEEN DISCONNECT SWITCHES, CONTROL CABINETS, CONTACTORS, AND EQUIPMENT TERMINALS REQUIRED BY EQUIPMENT FURNISHED BY OTHER TRADES.
5. ALL MOTOR/PUMPS/AIR HANDLING UNITS SHALL BE PROVIDED WITH THE PROPER FUSE SIZE/RATING DISCONNECT SWITCH WHETHER INDICATED ON THE DRAWINGS OR NOT TO COMPLY WITH NEC. INSTALL AND CONNECT DISCONNECT SWITCHES FURNISHED BY OTHER TRADES.

C. ENCLOSED CIRCUIT BREAKERS
1. FURNISH AND INSTALL, WHERE INDICATED, ENCLOSED CIRCUIT BREAKER HAVING THE ELECTRICAL CHARACTERISTICS, RATINGS, AND MODIFICATION SHOWN ON THE DRAWINGS. ALL ENCLOSED CIRCUIT BREAKERS SHALL HAVE THE FOLLOWING:
(A) NEMA 1 GENERAL PURPOSE FLUSH MOUNTED ENCLOSURES UNLESS OTHERWISE NOTED.
(B) METAL NAMEPLATE MOUNTED ON THE FRONT COVER CONTAINING A PERMANENT RECORD OF CATALOG NUMBER AND MAXIMUM RATINGS.
(C) HANDLES PADLOCKABLE IN "OFF" POSITION.
(D) GROUND FAULT TRIP FUNCTION.

2.4 BOXES - JUNCTION, PULL AND OUTLET

A. MANUFACTURERS
1. MATERIALS USED FOR PULL, JUNCTION, OUTLET BOXES, ETC. SHALL BE MANUFACTURED BY ONE OF THE FOLLOWING:
(A) APPLETON
(B) CROUSE HINDS
(C) KILLARK
(D) RACO
(E) STEEL CITY
(F) LEE PRODUCTS
(G) HOFFMAN ENGINEERING
(H) MCKINSTRY, INC.

B. PULL AND JUNCTION BOXES
1. PULL AND JUNCTION BOXES SHALL BE CONSTRUCTED OF CODE GAUGE GALVANIZED STEEL AND SHALL BE INSTALLED AT POINTS REQUIRED WHETHER INDICATED ON THE DRAWINGS OR NOT. MINIMUM DIMENSION SHALL NOT BE LESS THAN NEC ARTICLE 314 REQUIREMENTS.
2. PROVIDE FLAT PLAIN COVERS WITH SUITABLE FLAT HEAD MACHINE SCREWS OR SLOTTED TRUSS HEAD BOLTS. COVERS SHALL BE OF SAME GAUGE AS ASSOCIATED BOX. PROVIDE EITHER SCREW-ON OR HINGED TYPE COVERS.
3. PULL OR JUNCTION BOXES WITH MAXIMUM SIDE OF 4'-0" SHALL BE MADE OF 1-1/2" BY 1-1/2" BY 1/4" GALVANIZED ANGLE FRAME COVERED WITH 10 GAUGE GALVANIZED SHEET STEEL RIVETED OR WELDED TO FRAME. COVER PLATE SHALL BE 10 GAUGE GALVANIZED STEEL SECURED WITH ROUND HEAD SILICON BRONZE MACHINE SCREWS SPACED AT 12" CENTERS MAXIMUM.
4. BOXES MOUNTED FLUSH IN WALLS SHALL HAVE OVERLAPPING COVERS WITH FLUSH HEAD RETAINING SCREWS. COVERS SHALL BE OVERSIZED 2" ON ALL SIDES AND SHALL BE MINIMUM 14 GAUGE STEEL.
5. ALL PULL AND JUNCTION BOXES SHALL BE POWDER COAT PAINTED.

C. OUTLET BOXES
1. OUTLET BOXES SHALL BE 1-PIECE GALVANIZED STEEL CONSTRUCTION CONFORMING TO UL 514 AND SHALL MEET NEC REQUIREMENTS FOR SIZE AND MATERIAL AND SHALL BE OF PROPER SIZE AND SUITABLE FOR LOCATION INDICATED ON THE DRAWINGS.
2. ROUND BOXES AND HANDY BOXES SHALL NOT BE USED.
3. BOXES INSTALLED IN UNPLASTERED MASONRY WALLS SHALL HAVE COVERS OF REQUIRED DEPTH TO AVOID CUTTING OF MASONRY.
4. BOXES FOR EXTERIOR WORK SHALL BE 0.Z. GEDNEY OR APPROVED EQUAL FS OR FD SERIES, WITH CADMIUM PLATED COVERS. STEEL BOXES WILL NOT BE PERMITTED FOR THIS APPLICATION.
5. OUTLET BOXES USED AS JUNCTION BOXES SHALL BE MINIMUM 4-11/16" SQUARE AND 2" DEEP.
6. ALL SWITCH AND RECEPTACLE BOXES SHALL BE MINIMUM 4" SQUARE FOR UP TO (2) DEVICES, OR SOLID GANGED BOXES FOR OVER (2) DEVICES. BOXES SHALL BE PROVIDED WITH 1/2" RAISED GALVANIZED DEVICE COVERS FOR EXPOSED CONDUIT WORK.
7. OUTLET BOXES ON EXPOSED CONDUIT SYSTEMS, SHALL BE THREADED-HUB, CAST-METAL, CONDUIT TYPE FITTING FS OR FD SUITABLE FOR WIRING DEVICES INSTALLED.

2.5 WIRING DEVICES AND DEVICE PLATES

A. ACCEPTABLE MANUFACTURERS
1. HUBBELL
2. LEVITON
3. ARROW HART

B. WIRING DEVICES
1. CATALOG NUMBERS USED ARE TO DESIGNATE A STANDARD OF QUALITY FOR EACH PRODUCT. COLOR SHALL NOT BE CONSIDERED AS FIXED BY THE CATALOG NUMBERS LISTED HEREIN AND SHALL BE PER MGH STANDARDS.
2. RECEPTACLES: 2 POLE, 3 WIRE GROUNDING FOR DRY LOCATIONS, 20 AMPERE NEMA 5-20R - HUBBELL #8300 SERIES OR APPROVED EQUAL BY ARROW-HART OR LEVITON. ALL RECEPTACLES USED ON THIS PROJECT SHALL BE HOSPITAL GRADE.
3. SWITCHES: 20A, 1 POLE, 120/277V - HUBBELL #1221-IVORY.
4. SPECIAL PURPOSE OUTLETS: COORDINATE WITH EQUIPMENT UTILIZED FOR AMPERE SIZE AND CONFIGURATION, USE EQUIPMENT OF SAME MANUFACTURER AS ALL DEVICES.
5. GROUND FAULT RECEPTACLES: HUBBELL #GFR8300.

C. DEVICE PLATES
1. DEVICES PLATES SHALL BE ENGRAVED STAINLESS STEEL (#401) WITH PANEL NUMBER AND CIRCUIT NUMBER. REFER TO DETAIL ON DRAWING.

2.6 CONDUIT

A. GALVANIZED RIGID STEEL CONDUIT (GRSC), COUPLINGS, AND ELBOWS SHALL BE HOT-DIP GALVANIZED, RIGID MILD STEEL. THE CONDUIT INTERIOR AND EXTERIOR SURFACES SHALL HAVE A CONTINUOUS ZINC COATING WITH A TRANSPARENT OVERCOAT OF ENAMEL, LACQUER, OR ZINC CHROMATE. COUPLINGS, CONNECTORS, AND FITTINGS FOR RIGID STEEL CONDUIT SHALL BE THREADED GALVANIZED STEEL OR GALVANIZED MALLEABLE IRON SPECIFICALLY DESIGNED AND MANUFACTURED FOR THE PURPOSE.

B. ELECTRICAL METALLIC TUBING (EMT), INCLUDING ELBOWS AND BENDS, SHALL BE ZINC-COATED MILD STEEL. THE INTERIOR AND EXTERIOR SURFACES OF THE TUBING SHALL HAVE A CONTINUOUS ZINC COATING. EMT FITTINGS SHALL BE STEEL DOUBLE SET SCREW TYPE.

C. ALUMINUM CONDUIT SHALL NOT BE UTILIZED ON THIS PROJECT.

D. LIQUIDTIGHT FLEXIBLE CONDUIT SHALL BE PLASTIC JACKETED, GALVANIZED STEEL, SEALTITE TYPE EF FOR SIZES UP TO 1-1/4" AND TYPE UA FOR SIZES OVER 1-1/4". LIQUID TIGHT FLEXIBLE METAL CONDUIT SHALL BE HIGH TEMPERATURE, PLASTIC JACKETED GALVANIZED STEEL FOR HIGH TEMPERATURE LOCATIONS. LIQUIDTIGHT FLEXIBLE METAL CONDUIT SHALL BE USED IN SHORT RUNS TO CONNECT MOTORS WHERE MOVEMENT AND VIBRATION REQUIRES A FLEXIBLE CONNECTION. MAXIMUM LENGTH NOT TO EXCEED 5'-0".

E. COMBINATION FITTINGS USED TO CONNECT RIGID STEEL CONDUIT TO ELECTRICAL METALLIC TUBING SHALL HAVE A THREADED THROAT TO RECEIVE THE RIGID STEEL CONDUIT AND SHALL HAVE A COMPRESSION TYPE THROAT TO RECEIVE THE ELECTRICAL METALLIC TUBING.

F. ALL EXTERIOR FITTINGS SHALL BE STAINLESS STEEL.

G. MINIMUM SIZE CONDUIT SHALL BE 3/4".

H. CONDUIT SHALL BE AS MANUFACTURED BY ANACONDA, ALLIED, REPUBLIC, WHEATLAND OR APPROVED EQUAL.

I. ALL INTERIOR FEEDERS AND BRANCH CIRCUITS SHALL BE EMT. ALL EXTERIOR FEEDERS AND BRANCH CIRCUITS SHALL BE GRSC. MAKE CONNECTIONS TO MOTORS AND EQUIPMENT WITH PVC JACKETED FLEXIBLE METALLIC CONDUIT AND LIQUID-TIGHT CONNECTORS.

J. CONDUIT AND EMT RUNS SHALL BE MECHANICALLY AND ELECTRICALLY CONTINUOUS. CONDUIT SHALL ENTER AND BE SECURED TO CABINET, JUNCTION BOX, PULL BOX, OR OUTLET BOX WITH LOCKNUT OUTSIDE AND BUSHING INSIDE, OR WITH LIQUID TIGHT, THREADED, SELF-LOCKING, COLD-WELD WEDGE ADAPTER.

K. PROVIDE BONDING BUSHINGS ON ALL CONDUITS 2" AND LARGER.

L. PROVIDE DOUBLE SET SCREW TYPE FITTINGS FOR ALL CONDUITS OVER 1".

2.7 HANGERS AND SUPPORTS

A. INSTALLATION OF HANGERS AND SUPPORTS
1. PROVIDE ALL REQUIRED HANGERS, SUPPORTS, SLEEVES, CLAMPS, ETC., AS REQUIRED FOR ALL EQUIPMENT INDICATED ON THE DRAWINGS.
2. ALL HORIZONTAL RUNS OF CONDUITS SHALL BE PROPERLY GROUPED, ALIGNED, USING SUBSTANTIAL HANGERS, STRAPS, ETC. HANGERS AND SUPPORTS SHALL BE INSTALLED AT INTERVALS NOT EXCEEDING NEC RECOMMENDATIONS.
3. SUPPORTING RODS SHALL BE THREADED AT ENDS WITH ALLOWANCE FOR ADJUSTMENTS. WIRE AND STRAP HANGERS WILL NOT BE PERMITTED. ALL CONDUIT AND FITTINGS SHALL BE SUPPORTED BY HANGERS, CHANNELS, ETC., USING BOLTS AND/OR LEAD EXPANSION SLEEVES.
4. LIGHTING FIXTURES SHALL BE SUPPORTED AND HUNG FROM BUILDING STEEL OR MASONRY, INDEPENDENT OF THE CEILING CONSTRUCTION EITHER USING RODS, CHAIN HANGERS, OR MECHANICAL SUSPENSION CHANNEL. ALL PENDANT LIGHTING FIXTURES SHALL BE SUSPENDED BY USING THREADED CONDUIT 1/2" MINIMUM, WITH CANOPY KIT AND PAINTED PER ARCHITECT'S SELECTION.
5. STRUCTURAL SUPPORT INTERFACE
(A) ALL CONDUIT, RACEWAYS, ELECTRICAL EQUIPMENT AND OTHER SIMILAR SYSTEM COMPONENTS WHICH ARE SUPPORTED BY ROOF JOINTS SHALL BE HUNG FROM THE TOP CHORD OR BOTTOM CHORD PANEL POINT OR A PANEL POINT SHALL BE PROVIDED BY APPLYING A VERTICAL WEB MEMBER. THE MAXIMUM LOAD SHALL NOT EXCEED 250 LBS.
(B) ALL CONDUIT, RACEWAYS, ELECTRICAL EQUIPMENT, ETC., WHICH ARE SUPPORTED BY ROOF/FLOOR BEAMS SHALL BE HUNG FROM THE BEAMS WITH CLAMP ATTACHMENTS WHICH ENGAGE BOTH EDGES OF THE BEAM FLANGE. THE HANGER SHALL BE LOCATED DIRECTLY BELOW THE WEB OF THE BEAM AND THE HANGER LOAD SHALL BE LIMITED TO 1000 LBS. IN AREA ABOVE MECHANICAL ROOM AND 250 LBS. IN REMAINING AREAS, UNLESS OTHERWISE APPROVED BY THE ARCHITECT.
(C) ALL ADDITIONAL SUPPORTS, CLAMPS, WEB MEMBERS, ETC., REQUIRED TO COMPLY WITH THE ABOVE REQUIREMENTS SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR, AS APPLICABLE, FOR THE WORK FURNISHED AND INSTALLED UNDER THIS CONTRACT.

B. RACEWAYS SUPPORTS AND HANGERS
1. RACEWAYS SHALL BE SECURELY FASTENED TO THE STRUCTURE, WITH SUPPORT MECHANISMS SPACED AS DICTATED BY THE NEC OR AS SPECIFIED BELOW, WHICHEVER IS MORE STRINGENT.
2. RACEWAYS SUPPORTS AND HANGERS SHALL NOT BE HUNG FROM DUCTWORK, PIPING OR GYPSUM CEILING.
3. SUPPORT RIGID IMC OR EMT CONDUITS WITHIN 3' -0" OF EVERY OUTLET BOX, JUNCTION BOX, PULL BOX, CABINET OR TERMINATION. SUPPORT FLEXIBLE CONDUIT WITHIN 12" ON EACH SIDE OF EVERY OUTLET BOX OR FITTING.
4. SUPPORT CONDUITS BY PIPE STRAPS, WALL BRACKETS, HANGERS, OR CEILING TRAPEZE. THE USE OF PERFORATED IRON OR WIRE FOR SUPPORTING CONDUITS IS PROHIBITED. FASTEN WITH BY TOGGLE BOLTS ON HOLLOW MASONRY UNITS, BY CONCRETE INSERTS, OR EXPANSION BOLTS ON CONCRETE OR SPRING TENSION OR THREADED C CLAMPS FOR RIGID STEEL CONDUITS ON STEEL. DO NOT WELD CONDUITS OR PIPE STRAPS TO STEEL STRUCTURES UNLESS SPECIFICALLY INDICATED.
5. THE LOAD APPLIED TO FASTENERS SHALL NOT EXCEED 1/3 THE PROOF TEST LOAD OF THE FASTENERS.
6. FASTENERS ATTACHED TO CONCRETE SHALL BE VIBRATION AND SHOCK RESISTANT.
7. WHERE (2) OR MORE CONDUITS 1" TRADE SIZE OR LARGER RUN PARALLEL, TRAPEZE HANGERS MAY BE USED CONSISTING OF THREADED SOLID RODS, WASHERS, NUTS AND GALVANIZED "L" ANGLE OR CHANNEL IRON. INDIVIDUALLY FASTEN CONDUITS TO THE CROSS MEMBER OF EVERY OTHER TRAPEZE HANGER WITH ONE HOLD STRAPS OR CLAMP BACKS WITH PROPER SIZE BOLTS, WASHERS AND NUTS. WHEN ADJUSTABLE TRAPEZE HANGERS ARE USED, USED U-BOLT TYPE CLAMPS AT END OF CONDUIT RUNS, AT EACH ELBOW AND AT EACH THIRD INTERMEDIATE HANGER TO FASTEN EACH CONDUIT.
8. MAKE HANGERS OF DURABLE MATERIALS SUITABLE FOR THE APPLICATION INVOLVED. APPLIED LOADS SHALL NOT EXCEED 1/3 OF THEIR LOADING CAPACITY.
9. FABRICATE ALL SCREWS, BOLTS, WASHERS AND MISCELLANEOUS HARDWARE USED FOR CONDUIT SUPPORTS FROM RUST RESISTANT METAL. TRAPEZE HANGERS SHALL HAVE HANGER ASSEMBLIES PROTECTED BY A GALVANIZED FINISH.

2.8 PANELBOARDS

A. GENERAL
1. FURNISH AND INSTALL ALL PANELBOARDS FOR LIGHTING, POWER, AND DISTRIBUTION, MOLDED CASE CIRCUIT BREAKER TYPE WITH DEAD FRONT SAFETY CONSTRUCTION AS SCHEDULED ON PLANS AND DESCRIBED HEREIN.
2. PANELBOARDS SHALL BE UL LISTED (UL 67) AND SHALL CONFORM TO THE LATEST REQUIREMENTS OF NEC AND NEMA. THE PANELBOARD SHALL MEET SERVICE ENTRANCE REQUIREMENTS WHEN SPECIFIED.
3. PANELBOARDS SHALL BE PROVIDED WITH TYPEWRITTEN DIRECTORIES OF CIRCUIT NUMBERS, EQUIPMENT SERVED, AND AREA SERVED. EACH PANEL SHALL HAVE AN ENGRAVE NAMEPLATE FOR EACH SECTION.
4. PANELBOARDS SHALL BE OF DEAD FRONT CONSTRUCTION WITH THERMAL MAGNETIC CIRCUIT BREAKERS AND SHALL CONFORM TO THE REQUIREMENTS OF NEMA AND NEC. ALL PANELBOARDS SHALL BE UL APPROVED AND LABELED. PANELS SHALL HAVE NOT LESS THAN THE SHORT CIRCUIT RATINGS AVAILABLE FROM THE POWER SOURCES. SERIES RATING MAY BE APPLIED, PROVIDED THAT LABEL IS SUPPLIED ON EACH PANEL STATING LIMITATIONS OF SERIES RATING AND THAT ALL SERIES RATINGS HAVE BEEN UL APPROVED. NO SERIES RATINGS SHALL BE APPLIED ON ANY PANELS. ALL PANELS RATED OVER 225 AMPERE SHALL HAVE FULLY RATED BREAKERS PER SPECIFICATIONS.

B. RATINGS
1. PANELBOARDS RATED 240 VAC OR LESS SHALL HAVE SHORT-CIRCUIT RATINGS AS SHOWN ON THE DRAWINGS OR AS HEREIN SCHEDULED, BUT NOT LESS THAN 10,000 AMPERES RMS SYMMETRICAL.
2. PANELBOARDS RATED 480 VAC SHALL HAVE SHORT-CIRCUIT RATINGS AS SHOWN ON THE DRAWINGS OR AS HEREIN SCHEDULED, BUT NOT LESS THAN 65,000 AMPERES RMS SYMMETRICAL.
3. PANELBOARDS SHALL BE LABELED WITH A UL SHORT-CIRCUIT RATING.

C. SERIES RATINGS
1. SERIES RATING OF PANELBOARDS IS NOT ACCEPTABLE ON THIS PROJECT.

D. CONSTRUCTION
1. INTERIORS SHALL BE COMPLETELY FACTORY ASSEMBLED. THEY SHALL BE DESIGNED SUCH THAT SWITCHING AND PROTECTIVE DEVICES CAN BE REPLACED WITHOUT DISTURBING ADJACENT UNITS AND WITHOUT REMOVING THE MAIN BUS CONNECTORS.
2. TRIMS FOR BRANCH CIRCUIT PANELBOARDS SHALL BE SUPPLIED WITH A HINGED DOOR OVER ALL CIRCUIT BREAKER HANDLES. DOORS IN PANELBOARD TRIMS SHALL NOT UNCOVER ANY LIVE PARTS. DOORS SHALL HAVE A SEMI FLUSH CYLINDER LOCK AND CATCH ASSEMBLY. DOOR-IN-DOOR TRIM SHALL BE PROVIDED. BOTH HINGED TRIM AND TRIM DOOR SHALL UTILIZE THREE POINT LATCHING. NO TOOLS SHALL BE REQUIRED TO INSTALL OR REMOVE TRIM. TRIM SHALL BE EQUIPPED WITH A DOOR-ACTUATED TRIM LOCKING TAB. EQUIP LOCKING TAB WITH PROVISION FOR A SCREW SUCH THAT REMOVAL OF TRIM REQUIRES A TOOL, AT THE OWNER'S OPTION. INSTALLATION SHALL BE TAMPER RESISTANT WITH NO EXPOSED HARDWARE ON THE PANELBOARD TRIM.
3. DISTRIBUTION PANELBOARD TRIMS SHALL COVER ALL LIVE PARTS. SWITCHING DEVICE HANDLES SHALL BE ACCESSIBLE.
4. SURFACE TRIMS SHALL BE SAME HEIGHT AND WIDTH AS BOX. FLUSH TRIMS SHALL OVERLAP THE BOX BY 3/4 OF AN INCH ON ALL SIDES.
5. A DIRECTORY CARD WITH A CLEAR PLASTIC COVER SHALL BE SUPPLIED AND MOUNTED ON THE INSIDE OF EACH DOOR.
6. ALL LOCKS SHALL BE KEYED ALIKE.

E. BUS
1. BUS BARS SHALL BE CURRENT DENSITY RATED AND MEET UL67 TEMPERATURE RISE LIMITS THROUGH ACTUAL TESTS.
2. BUS BARS SHALL BE SEQUENCED PHASED AND RIGIDLY SUPPORTED BY HIGH IMPACT RESISTANT, INSULATED BUS SUPPORTING ASSEMBLIES TO PREVENT VIBRATION OR SHORT CIRCUITS. ALL SOLDERLESS TERMINATIONS SHALL BE SUITABLE FOR EITHER COPPER OR ALUMINUM UL LISTED WIRE OR CABLE AND SHALL BE UL TESTED AND LISTED.
3. MAIN BUS BARS SHALL BE COPPER SIZED IN ACCORDANCE WITH UL STANDARDS TO LIMIT TEMPERATURE RISE ON ANY CURRENT CARRYING PART TO A MAXIMUM OF 65 DEGREES C ABOVE AN AMBIENT OF 40 DEGREES C MAXIMUM.
4. A COPPER SYSTEM GROUND BUS SHALL BE INCLUDED IN ALL PANELS.
5. FULL-SIZE (100%-RATED) COPPER INSULATED NEUTRAL BARS SHALL BE INCLUDED FOR PANELBOARDS SHOWN WITH NEUTRAL. BUS BAR TAPS FOR PANELS WITH SINGLE-POLE BRANCHES SHALL BE ARRANGED FOR SEQUENCE PHASING OF THE BRANCH CIRCUIT DEVICES. NEUTRAL BUSING SHALL HAVE A SUITABLE LUG FOR EACH OUTGOING FEEDER REQUIRING A NEUTRAL CONNECTION.

F. BRANCH CIRCUIT PANELBOARDS
1. THE MINIMUM SHORT-CIRCUIT RATING FOR BRANCH CIRCUIT PANELBOARDS SHALL BE AS SPECIFIED HEREIN OR AS INDICATED ON THE DRAWINGS. PANELBOARDS SHALL BE FULLY RATED. PANELBOARDS SHALL BE CUTLER-HAMMER TYPE POW-R-LINE 1A, POW-R-LINE 2A OR POW-R-LINE 3A OR APPROVED EQUAL.
2. BOLT-ON TYPE, HEAVY-DUTY, QUICK-MAKE, QUICK-BREAK, SINGLE- AND MULTI-POLE CIRCUIT BREAKERS OF THE TYPES SPECIFIED HEREIN, SHALL BE PROVIDED FOR EACH CIRCUIT WITH TOGGLE HANDLES THAT INDICATE WHEN UNIT HAS TRIPPED.
3. CIRCUIT BREAKERS SHALL BE THERMAL-MAGNETIC TYPE WITH COMMON TYPE HANDLE FOR ALL MULTIPLE POLE CIRCUIT BREAKERS. CIRCUIT BREAKERS SHALL BE MINIMUM 100-AMPERE FRAME AND THROUGH 100-AMPERE TRIP SIZES SHALL TAKE UP THE SAME POLE SPACING. CIRCUIT BREAKERS SHALL BE UL LISTED AS TYPE SWD FOR LIGHTING CIRCUITS.
(A) CIRCUIT BREAKER HANDLE LOCKS SHALL BE PROVIDED FOR ALL CIRCUITS THAT SUPPLY EXIT SIGNS, EMERGENCY LIGHTS, ENERGY MANAGEMENT, AND CONTROL SYSTEM (EMCS) PANELS AND FIRE ALARM PANELS.
4. CIRCUIT BREAKERS SHALL HAVE A MINIMUM INTERRUPTING RATING OF 10,000 AMPERES SYMMETRICAL AT 240 VOLTS, AND 14,000 AMPERES SYMMETRICAL AT 480 VOLTS, UNLESS OTHERWISE NOTED ON THE DRAWINGS.

G. DISTRIBUTION PANELBAORDS - CIRCUIT BREAKER TYPE
1. DISTRIBUTION PANELBOARDS WITH BOLT-ON DEVICES CONTAINED THEREIN SHALL HAVE INTERRUPTING RATINGS AS SPECIFIED HEREIN OR INDICATED ON THE DRAWINGS. PANELBOARDS SHALL BE FULLY RATED. PANELBOARDS SHALL BE CUTLER-HAMMER TYPE POW-R-LINE 3A OR POW-R-LINE 4B OR APPROVED EQUAL. PANELBOARDS SHALL HAVE MOLDED CASE CIRCUIT BREAKERS AS INDICATED BELOW.
2. WHERE INDICATED, PROVIDE CIRCUIT BREAKERS UL LISTED FOR APPLICATION AT 100% OF THEIR CONTINUOUS AMPERE RATING IN THEIR INTENDED ENCLOSURE.
3. PROVIDE SHUNT TRIPS, BELL ALARMS, AND AUXILIARY SWITCHES AS SHOWN ON THE CONTRACT DRAWINGS.

H. ENCLOSURE
1. ENCLOSURES SHALL BE AT LEAST 20 INCHES WIDE MADE FROM GALVANIZED STEEL. PROVIDE MINIMUM GUTTER SPACE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. WHERE FEEDER CABLES SUPPLYING THE MAINS OF A PANEL ARE CARRIED THROUGH ITS BOX TO SUPPLY OTHER ELECTRICAL EQUIPMENT, THE BOX SHALL BE SIZED TO INCLUDE THE ADDITIONAL REQUIRED WIRING SPACE. AT LEAST FOUR INTERIOR MOUNTING STUDS WITH ADJUSTABLE NUTS SHALL BE PROVIDED.
2. ENCLOSURES SHALL BE PROVIDED WITH BLANK ENDS.

I. NAMEPLATES
1. PROVIDE AN ENGRAVED NAMEPLATE FOR EACH PANEL SECTION. REFER TO SECTION 2.12 FOR ADDITIONAL REQUIREMENTS.

J. FINISH
1. SURFACES OF THE TRIM ASSEMBLY SHALL BE PROPERLY CLEANED, PRIMED, AND A FINISH COAT OF GRAY ANSI 61 PAINT APPLIED.

K. ACCEPTABLE MANUFACTURERS
1. CUTLER-HAMMER

L. STANDARDS
1. ALL PANELBOARDS SHALL BE UL LISTED.

2.9 FUSES

A. GENERAL
1. ALL FUSES SHALL BE RATED FOR PROPER VOLTAGE IN WHICH THEY ARE APPLIED. INTERRUPTING RATINGS SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT AVAILABLE AT THE TERMINALS OF THE SWITCH.
2. PROVIDE FUSES FOR PROPERLY COORDINATED SYSTEM OF OVERCURRENT PROTECTION. BLOWN FUSES ARE TO BE REPLACED DURING CONSTRUCTION AND DURING TESTS. FURNISH IN EACH DEVICE TO BE USED ON REPLACEMENT.
3. PROVIDE ALL REQUIRED ACCESSORIES (FUSE CLIPS, HOLDERS, ETC.) AS REQUIRED FOR INSTALLATION OF FUSES WITHIN REQUIRED DISCONNECT.

B. FUSE TYPES
1. FUSES SHALL BE SIZED AT 125% OF RATED FLA OF EQUIPMENT SERVED.
2. LIGHTING AND HEATING LOAD 600V OR LESS
(A) 600A OR LESS IN INTERRUPTER SWITCHES CLASS RK-1: BUSSMAN KTS-R, ECONOMY SCL-R, SHAWMUT AGK.

C. SPARE FUSES
1. PROVIDE A COMPLETE SET OF SPARE FUSES FOR EACH FUSE SWITCH.
2. SPARE FUSES SHALL INCLUDE GENERAL PURPOSE FUSES, MOTOR FUSES, AND CONTROL FUSES USED IN STARTERS, ETC.

D. MANUFACTURERS
1. FERRAZ SHAWMUT
2. BUSSMAN
3. LITTELFUSE

2.10 GROUNDING

A. GENERAL
1. ALL GROUNDING MATERIALS REQUIRED SHALL BE FURNISHED NEW AND UNDAMAGED.
2. ALL CIRCUITS SHALL CONTAIN A GREEN INSULATED GROUND CONDUCTOR.

B. CABLE
1. INSULATED CABLE: SOFT DRAWN COPPER, CLASS B STRANDING WITH GREEN PVC INSULATION, UL 83, TYPE TW, AND THW.
2. BARE CABLE: SOFT DRAWN COPPER. CLASS AA STRANDING, ASTM B8.

C. BUS AND BARS
1. SOFT COPPER, CROSS MINIMUM 1/8" THICK BY 1" WIDE, ASTM B187.
2. COPPER BUS 1/4" X 2 1/2" X 24" FOR GROUND TERMINAL BARS IN ELECTRIC ROOMS.

D. MISCELLANEOUS
1. ALL CLAMPS, CONNECTORS, BOLTS, WASHERS, NUTS, AND OTHER HARDWARE USED WITH THE GROUNDING SYSTEM SHALL BE HIGH-STRENGTH, HIGH CONDUCTIVITY COPPER ALLOY.
2. ALL CONDUCTORS SHALL BE INSULATED UNLESS OTHERWISE INDICATED.
3. PROVIDE EXOTHERMIC (CADWELD) CONNECTIONS FOR ALL TRANSFORMERS SECONDARY GROUNDS TO BUILDING STEEL OR PIPING.
4. PROVIDE EXOTHERMIC (CADWELD) FOR CONNECTIONS TO ALL GROUND RODS AND STRUCTURAL STEEL MEMBERS.

E. MECHANICAL CONNECTORS -
1. MANUFACTURERS: APPLETON CO., THOMAS & BETTS, O.Z. GEDNEY CORP, AND BURNDY CORP., MATERIAL: BRONZE

F. EXOTHERMIC CONNECTIONS - MANUFACTURERS: ERICO PRODUCTS, INC., AMERICAN BRASS MFG. CO.

PART 3 EXECUTION

3.1 GENERAL

A. ALL SYSTEMS SHALL BE TESTED FOR SHORT CIRCUITS AND GROUNDS PRIOR TO ENERGIZING. ANY DEFECTS FOUND SHALL BE CORRECTED.

B. ALL WORK SHALL BE GROUNDED IN ACCORDANCE WITH CODE REQUIREMENTS. COMPLETE EQUIPMENT GROUNDING SYSTEM (INSULATED GREEN WIRE) SHALL BE INSTALLED IN ALL BRANCH CIRCUITS.

C. CIRCUIT BREAKERS USED TO CONTROL HEATING, AIR CONDITIONS AND REFRIGERATION EQUIPMENT SHALL BE UL LISTED TYPE HACR RATED.

D. CLEAN OUT CONDUIT BEFORE INSTALLATION OF CONDUCTOR.

E. ALL CONDUITS SHALL BE PROPERLY SUPPORTED IN ACCORDANCE WITH CODE REQUIREMENTS.

3.2 CONNECTIONS TO EQUIPMENT

A. WHERE CONNECTIONS ARE MADE IN EXISTING PANELS, THE PANEL INDEX SHALL BE REVISED TO INDICATE THE NEW LOADS SERVED. NEW CIRCUIT BREAKERS ADDED TO EXISTING PANELS SHALL BE THE SAME FRAME SIZE, VOLTAGE RATING AND INTERRUPTING CAPACITY AS EXISTING PANEL AND CIRCUIT BREAKERS.

B. CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH ALL SECTIONS OF THESE SPECIFICATIONS IN ORDER TO PROVIDE NECESSARY ELECTRICAL CONNECTIONS TO ALL EQUIPMENT, WHETHER OR NOT SUCH EQUIPMENT SHALL BE CONNECTED, COMPLETE, READY FOR OPERATION IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

C. PROVIDE ALL POWER WIRING COMPLETE FROM POWER SOURCE TO MOTOR OR EQUIPMENT JUNCTION BOX INCLUDING POWER WIRING THROUGH STARTERS.

D. SAFETY DISCONNECT SWITCHES SHALL BE PROVIDED FOR ALL MOTORS WHERE REQUIRED BY THE NATIONAL ELECTRICAL CODE WHETHER SHOWN ON THE DRAWINGS OR NOT.

3.3 INSPECTIONS AND TESTING

A. ALL WORK AND MATERIALS COVERED BY THESE SPECIFICATIONS SHALL BE SUBJECT TO INSPECTION AT ANY AND ALL TIMES BY REPRESENTATIVES OF THE OWNER.

B. IF THE OWNER'S INSPECTOR FINDS THAT ANY MATERIAL DOES NOT CONFORM TO THESE SPECIFICATIONS, THE ELECTRICAL CONTRACTOR SHALL REMOVE THE MATERIAL FROM THE PREMISES. IF SAID MATERIAL HAS BEEN INSTALLED, THE ENTIRE EXPENSE OF REMOVING AND REPLACING SAME, INCLUDING ANY CUTTING AND PATCHING THAT MAY BE NECESSARY, SHALL BE BORNE BY THE ELECTRICAL CONTRACTOR.

C. AT THE TIME OF FINAL INSPECTION, ALL CONNECTIONS AT PANELBOARDS AND EQUIPMENT MUST BE COMPLETED.

3.4 COOPERATION WITH OTHER TRADES

A. COOPERATE WITH OTHER TRADES IN ORDER THAT ALL SYSTEMS MAY BE INSTALLED IN THE BEST ARRANGEMENT. COORDINATION AS REQUIRED WITH ALL OTHER TRADES TO SHARE SPACE IN COMMON AREAS AND TO PROVIDE THE MAXIMUM OF ACCESS TO EACH SYSTEM.

3.5 CLEANING

A. CONTRACTOR SHALL REMOVE ANY MATERIALS NOT INSTALLED IN HIS WORK WHICH WOULD INTERFERE WITH THE WORK OF BUILDING PERSONNEL OR OTHER CONTRACTORS, IF SO DIRECTED BY THE OWNER. AT THE COMPLETION OF WORK EACH DAY, THE ELECTRICAL CONTRACTOR SHALL CLEAN UP AND REMOVE FROM THE PREMISES ALL DEBRIS AND MATERIALS NOT INSTALLED.

3.6 COMPLETENESS

A. IT IS THE INTENT OF THE SPECIFICATIONS TO PROVIDE A COMPLETE SYSTEM. COMPLETENESS SHALL MEAN NOT ONLY THAT ALL MATERIAL AND EQUIPMENT HAS BEEN INSTALLED PROPERLY, BUT THAT ALL MATERIAL AND EQUIPMENT IS OPERATING PROPERLY AS DESIGNED.

3.7 WIRE AND CABLE - 600 VOLTS AND BELOW

A. GENERAL INSTALLATION REQUIREMENTS
1. ALL WORK SHALL CONFORM TO THE PRINTED SPECIFICATIONS AND INSTALLATIONS OF EACH OF THE MANUFACTURERS, THE APPROVED SHOP DRAWINGS, AND TO THE REQUIREMENTS OF THE GOVERNING LAWS AND BUILDING CODE.
2. INSPECT JOB CONDITIONS AND RELATED WORK AND REPORT TO THE ENGINEER, ANY CONDITIONS ADVERSELY AFFECTING RACEWAY WORK.
3. ALL WIRE AND CABLE SHALL BE INSTALLED IN APPROVED RACEWAYS (AS SPECIFIED ELSEWHERE IN THESE SPECIFICATIONS), AND AS APPROVED BY AUTHORITIES HAVING JURISDICTION. DO NOT USE SURFACE MOUNTED RACEWAYS ON FLOOR.

B. INSTALLATION OF FEEDERS AND BRANCH CIRCUITS
1. ALL FEEDER, BRANCH CIRCUIT, OR AUXILIARY SYSTEM WIRING PASSING THROUGH PULL BOXES AND/OR BEING MADE UP IN PANELBOARDS SHALL BE PROPERLY GROUPED, BOUND AND TIED TOGETHER IN A NEAT AND ORDERLY MANNER IN KEEPING WITH THE HIGHEST STANDARDS OF THE TRADE, WITH PLASTIC CABLE TIES. LOOSE ENDS OF THE CABLE TIES SHALL BE PROPERLY TRIMMED AFTER MAKING UP SAME. CABLE TIES SHALL BY TY-RAPS, AS MANUFACTURED BY THOMAS AND BETTS, HOLUB INDUSTRIES, INC., QUICK-WRAP, BURNDY UNIRAP, OR EQUAL.
2. FOR LARGE SIZE CONDUCTORS AVAILABLE ONLY IN BLACK, USE COLORED PLASTIC TAPE AT ALL ENDS AND IN ALL JUNCTION AND PULL BOXES WHERE CONNECTIONS AND SPLICES ARE MADE FOR THE SPECIFIED COLOR CODE IDENTIFICATION. TAPE SHALL BE WRAPPED AROUND THE CONDUCTOR (3) COMPLETE TURNS.
3. FOR FEEDERS AND BRANCH CIRCUITS CONDUCTORS #8 AWG AND LARGER JOINTS AND SPLICES SHALL BE MADE IN AN APPROVED MANNER AND SHALL BE EQUIVALENT, ELECTRICALLY, AND MECHANICALLY, TO THE CONDUCTOR INSULATION. CONDUCTORS SHALL BE CONNECTED BY USE OF SOLDERLESS PRESSURE CONNECTORS; THESE JOINTS AND SPLICES SHALL HAVE 3M PUTTY APPLIED AND THEN TAPED WITH A MINIMUM OF (3) WRAPS OF #88 SCOTCHBRAND (3M COMPANY) ALL-WEATHER VINYL PLASTIC ELECTRICAL TAPE, AND A DOUBLE HALF LAYER OF #33 ON TOP OF #88, OR EQUAL PERMACEL OR PLYMOUTH CO. EACH WRAP OF TAPE SHALL BE HALF-LAPPED.
4. PROVIDE NONFERROUS IDENTIFYING TAGS OR PRESSURE-SENSITIVE LABELS FOR CABLES, FEEDERS, AND POWER CIRCUITS IN PULL BOXES, WIREWAYS, CABLE TERMINATIONS, JUNCTION BOXES, PANELS, ETC.
5. TAGS OR LABELS SHALL BE STAMPED OR PRINTED TO CORRESPOND WITH MARKINGS ON THE DRAWINGS OR MARKED SO THAT FEEDER OR CABLE MAY BE IDENTIFIED READILY. IF SUSPENDED TAGS ARE PROVIDED, ATTACH WITH 1/32" DIAMETER, NYLON, 55LB. TEST MONOFILAMENT LINE OR SLIP-FREE PLASTIC CABLE LACING UNIT.
6. ALL WIRING SHALL BE INSTALLED AND SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE NEC.
7. WIRE FROM POINT OF SERVICE CONNECTION TO RECEPTACLES, LIGHTING FIXTURES, DEVICES, EQUIPMENT, OUTLETS FOR FUTURE EXTENSION, AND OTHER ELECTRICAL APPARATUS AS SHOWN ON THE DRAWINGS. PROVIDE SLACK WIRE FOR CONNECTIONS WHERE REQUIRED. TAPE ENDS OF WIRES AND PROVIDE BLANK COVERS FOR OUTLET BOXES DESIGNED FOR FUTURE USE. ALL BRANCH CIRCUIT WIRING SHALL BE INSTALLED IN CONDUIT.
8. ALL CONDUCTORS IN BRANCH CIRCUIT PANELBOARDS SHALL BE BUNDLED.
9. BRANCH CIRCUIT HOME RUNS WITH (2) OR (3) CIRCUITS AND COMMON NEUTRAL SHALL BE WIRED TO CIRCUIT BREAKERS SUCH THAT NONE OF THE CIRCUITS IN A COMMON CONDUIT ARE FED FROM THE SAME PHASE.
10. BRANCH CIRCUITS WIRING SHALL BE PEELED OUT OF THE WIRING GUTTERS AT THE TERMINAL CABINET AND PANELS AT 90° (DEGREES) TO CIRCUIT BREAKERS AND TERMINAL LUGS FOR CONNECTING TO SAME.
11. THE NUMBER AND SIZE OF CONDUCTORS IN EACH RUN OF CONDUIT IS INDICATED ON THE DRAWINGS AND WHERE THERE IS A CONFLICT BETWEEN THE NUMBER OF WIRES INDICATED AND THE ACTUAL NUMBER REQUIRED, THE ACTUAL NUMBER AND SIZE SHALL BE INSTALLED.
12. CONDUCTORS #10 AND SMALLER IN BRANCH CIRCUIT PANELBOARDS, SIGNAL CABINETS, SIGNAL CONTROL BOARDS IN SWITCHBOARDS, AND MOTOR CONTROL CENTERS SHALL BE BUNDLED.
13. FOLLOW HOMERUN CIRCUIT NUMBERS SHOWN ON THE DRAWINGS TO CONNECT CIRCUITS TO PANELBOARDS. WHERE HOMERUN CIRCUIT NUMBERS ARE NOT SHOWN ON THE DRAWINGS, DIVIDE SIMILAR TYPES OF CONNECTED LOADS AMONG PHASE BUSSES SO THAT CURRENTS IN EACH PHASE ARE WITHIN 10% OF EACH OTHER DURING NORMAL USAGE. BRANCH CIRCUIT HOMERUN WITH (2) OR (3) CIRCUITS AND COMMON NEUTRAL SHALL BE WIRED TO CIRCUIT BREAKERS SUCH THAT NONE OF THE CIRCUITS ARE FED FROM THE SAME PHASE.
14. JOINTS AND SPLICES SHALL BE MADE IN AN APPROVED MANNER AND SHALL BE EQUIVALENT, ELECTRICALLY AND MECHANICALLY, TO THE CONDUCTOR INSULATION. ALL CONDUCTORS SHALL BE CONNECTED BY USE OF SOLDERLESS CRIMP (COMPRESSION) TYPE CONNECTORS; THESE JOINTS AND SPLICES SHALL BE TAPED WITH (1) WRAP OF VARNISH CAMBRIC TAPE AND THEN A MINIMUM OF (3) WRAPS OF #88 SCOTCHBRAND (3M COMPANY) ALL WEATHER VINYL PLASTIC ELECTRICAL TAPE, OR EQUAL PERMACEL OR PLYMOUTH CO. EACH WRAP OF TAPE SHALL BE HALF-LAPPED.
15. ALL BRANCH CIRCUITS SHALL BE CONNECTED TO BREAKERS AT CONTRACTOR'S DISCRETION. THE BALANCING OF ALL LOADS SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
16. SPLICES, TAPS, AND LUGS SHALL BE ELECTRICALLY AND MECHANICALLY SECURE AND SOLDERLESS LUGS, AND CRIMP CONNECTORS SHALL BE USED. LUGS SHALL BE USED FOR CONDUCTOR SIZES #8 AWG AND LARGER. ALL LUGS SHALL BE OF THE PROPER SIZE, AND IN NO CASE SHALL STRANDS BE CUT FROM A CONDUCTOR IN ORDER TO FIT THE CONDUCTOR INTO A LUG. PROVIDE LUG/CABLE ADAPTORS FOR BREAKERS WHERE OVERSIZED CABLES ARE INDICATED. ALL LUG CONNECTIONS TO BUSES IN SWITCHBOARDS, UNIT SUBSTATIONS, MOTOR CONTROL CENTERS, ETC., SHALL BE 2-BOLT/NUT CONNECTIONS.
17. PROVIDE CABLE SUPPORTS FOR VERTICAL FEEDERS AS REQUIRED BY NEC.
18. PROVIDE SPLIT WEDGE CABLE SUPPORTS WITH CLAMPS FOR CABLE WITHOUT METALLIC SHEATH IN PULL BOXES. SUPPORTS SHALL BE AS MANUFACTURED BY O.Z. GEDNEY OR APPROVED EQUAL.

C. GENERAL
1. WHERE CONDUCTORS ARE ADJUSTED IN SIZE TO COMPENSATE FOR VOLTAGE DROP, EQUIPMENT GROUNDING CONDUCTORS AND CONDUITS SHALL BE ADJUSTED PROPORTIONATELY.
2. SPLICE ONLY IN ACCESSIBLE JUNCTION OR OUTLET BOXES.
3. NEATLY TRAIN AND LACE WIRING INSIDE BOXES, EQUIPMENT, AND PANELBOARDS.
4. MAKE CONDUCTOR LENGTHS FOR PARALLEL CIRCUITS EQUAL.
5. MAINTAIN COLOR CODING OF CONDUCTORS FOR ALL SYSTEMS.

D. CONNECTIONS AND TERMINATIONS
1. IDENTIFY EACH CONDUCTOR IN PANELBOARDS, JUNCTION OR PULL BOXES, OR TROUGHS WITH A PERMANENT PRESSURE SENSITIVE LABEL WITH SUITABLE NUMBERS OR LETTERS FOR EASY RECOGNITION. IDENTIFY CONTROL WIRING AT EACH END AND IN JUNCTION BOXES WITH NUMERIC WIRE NUMBER CORRESPONDING TO CONTROL WIRING DIAGRAM
2. THOROUGHLY CLEAN WIRE BEFORE INSTALLING LUGS AND CONNECTORS.
3. MAKE SPLICES, TAPS, AND TERMINATIONS TO CARRY FULL AMPACITY OF CONDUCTORS WITHOUT PERCEPTIBLE TEMPERATURE RISE.
4. TERMINATE SPARE CONDUCTORS WITH ELECTRICAL TAPE AND ROLL UP IN BOX.

A. FIELD QUALITY CONTROL
1. INSPECT WIRING FOR PHYSICAL DAMAGE AND PROPER CONNECTION.
2. TORQUE CONDUCTOR TERMINATIONS TO MANUFACTURER'S RECOMMENDED VALUES.
3. PERFORM CONTINUITY TESTS ON ALL POWER AND BRANCH CIRCUIT CONDUCTORS. VERIFY PROPER PHASING. REFER TO TESTING SECTION OF THIS SPECIFICATION FOR SPECIFIC TESTING REQUIREMENTS.

3.8 DISCONNECTS AND CIRCUIT BREAKERS

A. INSTALLATION OF MOTOR AND CIRCUIT DISCONNECT SWITCHES
1. SWITCHES AND FUSES SHALL BE INSTALLED AS INDICATED ON THE DRAWINGS AND AS DESCRIBED IN THESE SPECIFICATIONS.
2. ALL EQUIPMENT OR MOTORS SHALL HAVE LOCAL DISCONNECT SWITCHES. THESE SWITCHES SHALL BE MOUNTED ON, OR ADJACENT TO, THE EQUIPMENT OR MOTOR IN SUCH A MANNER THAT THEY SHALL BE ACCESSIBLE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING ALL BLOWN FUSES UNTIL SUCH TIME THAT THE JOB IS FINISHED AND ACCEPTED BY THE OWNER. THE CONTRACTOR SHALL ALSO, AT THE TIME OF ACCEPTANCE, FURNISH 10% SPARE FUSES OF EACH SIZE USED. IN NO CASE SHALL LESS THAN (3) FUSES BE FURNISHED OF EACH SIZE.
4. SWITCHES SHALL BE MOUNTED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS USING THE MOUNTING HARDWARE, MATERIALS, AND METHODS AS SPECIFIED HEREIN.
5. MOUNTING HEIGHT OF DISCONNECT SWITCHES SHALL BE A MAXIMUM OF 6'-6" ABOVE THE FINISHED FLOOR TO THE TOP OF THE SWITCH, UNLESS OTHERWISE INDICTED ON THE DRAWINGS OR DUE TO CONSTRUCTION INTERFERENCE.
6. ALL DISCONNECT SWITCHES MOUNTED WITHIN 6'-0" OF THE CENTER LINE OF SINKS, EMERGENCY SHOWERS, AND/OR EYEWASH SHALL BE EQUIPPED WITH A NEMA 3R RATED ENCLOSURE.
7. CONDUIT OPENINGS AND SWITCHES SHALL BE MADE WITH A HOLE SAW OR SHALL BE PUNCHED. ALL UNUSED OPENINGS SHALL BE PLUGGED OR CAPPED.

NOT FOR CONSTRUCTION

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PROJECT
OLD EVERETT HIGH SCHOOL - TASK 5
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CLIENT
CITY OF EVERETT, MA

CONSULANTS

REGISTRATION

Issue Date

KEYPLAN

ISSUE / REVISION

#	Date	Description

PROJECT NUMBER
BEMS26

SHEET TITLE
ELECTRICAL SPECIFICATIONS

SHEET NUMBER
E-002

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8. ALL DISCONNECT SWITCHES SHALL BE LABELED IN ACCORDANCE WITH THE REQUIREMENTS THE SPECIFICATIONS.
9. ALL DISCONNECT SWITCHES SHALL BE THOROUGHLY CLEANED PRIOR TO FINAL ACCEPTANCE BY OWNER.

3.9 BOXES - JUNCTION, PULL AND OUTLET

A. GENERAL INSTALLATION REQUIREMENTS
1. ALL BOXES SHALL BE ERECTED, RIGIDLY SUPPORTED AND SECURELY FASTENED IN PLACE, IN SUCH A MANNER THAT PLUMB, LEVEL, AND TRUE FINISHED LINES AND SURFACES WILL RESULT IN THE FINISHED WORK.
2. THE PLACEMENT OF ALL BOXES SHALL NOT INTERFERE WITH HVAC, PLUMBING OR SPRINKLER PIPING WORK.
3. LOCATE ALL CEILING OUTLETS WITH DUE CONSIDERATION TO CLEARANCE FROM VENTILATING DUCTS AND PIPING.
4. THE LOCATION OF OUTLETS SHOWN ON THE DRAWINGS IS DIAGRAMMATIC ONLY. COORDINATE THE EXACT LOCATION OF OUTLETS WITH ARCHITECTURAL DETAILS, EQUIPMENT CONNECTION REQUIREMENTS, AND WORK OF OTHER CONTRACTORS. THE OWNER'S REPRESENTATIVE MAY ALTER THE LOCATING OF OUTLETS SHOWN WITHIN A 6'-0" RADIUS PRIOR TO INSTALLATION.
5. PROTECT ALL OUTLET BOXES FROM ENTRY OF FOREIGN MATERIALS.
6. INDEPENDENTLY SUPPORT ALL BOXES. NO PARTS OF THE WEIGHT OR STRESS OR THEREOF SHALL BE BORNE BY CONDUITS TERMINATING THEREIN.
7. ALL BOXES SHALL BE RIGIDLY MOUNTED TO CONSTRUCTION AND SHALL BE EQUIPPED WITH SUITABLE SCREW FASTENED COVERS. UNUSED OPEN KNOCKOUTS IN ALL BOXES SHALL BE PLUGGED WITH SUITABLE BLANKING DEVICES. ALL BOXES INSTALLED THAT DO NOT HAVE EQUIPMENT MOUNTED ON THEM SHALL BE PROVIDED WITH BLANK COVERS.

B. INSTALLATION OF PULL AND JUNCTION BOXES
1. THE CONTRACTOR SHALL FURNISH AND INSTALL PULL BOXES FOR ALL FEEDERS AS REQUIRED BY NEC. PULL BOXES SHALL BE CODE GAUGE STEEL PLATES FASTENED TO ANGLE IRON FRAMES WITH REMOVABLE COVERS. COVERS SHALL BE SECURED WITH BRASS MACHINE SCREWS.
2. THE CONTRACTOR SHALL FURNISH AND INSTALL JUNCTION BOXES FOR FEEDERS AND BRANCH CIRCUITS AS REQUIRED. BOXES SHALL BE SIZED IN ACCORDANCE WITH NEC. JUNCTION BOXES SHALL BE CODE GAUGE STEEL WITH REMOVABLE COVERS. COVERS SHALL BE SECURED WITH BRASS MACHINE SCREWS.
3. SUITABLE PULL BOXES SHALL BE INSTALLED IN CONVENIENT INTERMEDIATE LOCATIONS IN ALL CONDUIT RUNS IN EXCESS OF 150 LINEAR FEET AND RUNS REQUIRING MORE THAN (3) 90° BENDS.
4. LOCATE PULL BOXES AND JUNCTION BOXES ABOVE REMOVABLE CEILINGS OR IN ELECTRICAL ROOMS, UTILITY ROOMS, STORAGE OR OTHER AREAS.
5. PULL BOXES SHALL BE INSTALLED IN A RIGID AND SATISFACTORY MANNER BY USE OF SHEET METAL SCREWS ON WOOD, BOLTS AND EXPANSION SHIELD ON CONCRETE OR BRICK, TOGGLE BOLTS ON HOLLOW MASONRY UNITS, AND MACHINE SCREWS OR WELDED THREADED STUDS ON STEEL WORK.

C. INSTALLATION OF OUTLET BOXES
1. LOCATION OF ALL WALL OUTLETS, SWITCHES, ETC., SHALL BE VERIFIED WITH THE ENGINEER PRIOR TO ROUGHING IN. REFER TO DETAILS AND WALL ELEVATIONS ON DRAWINGS.
2. THE CONTRACTOR SHALL FURNISH AND INSTALL OUTLET BOXES FOR ALL WIRING DEVICES AS SHOWN ON THE DRAWINGS.
3. THRU-THE-WALL OUTLET BOXES SHALL NOT BE PERMITTED.
4. WHENEVER OUTLET BOXES OF ANY SYSTEM ARE INSTALLED IN BRICK, TILE, AND ALL TYPES OF CONSTRUCTION BLOCKS AT OUTLETS. EXPOSED MORTAR SHALL NOT BE PERMITTED AROUND DEVICE PLATES.
   (A) THE CONTRACTOR IS RESPONSIBLE FOR CUTTING OPENINGS IN BRICK, TILE, AND ALL TYPES OF CONSTRUCTION BLOCKS AT OUTLETS. EXPOSED MORTAR SHALL NOT BE PERMITTED AROUND DEVICE PLATE.
5. LOCATION OF OUTLETS SHOWN ON THE DRAWINGS ARE APPROXIMATE; THE EXACT LOCATIONS SHALL BE DETERMINED BY THE PROJECT CONDITIONS.
6. ALL BOXES SHALL BE RIGIDLY MOUNTED TO CONSTRUCTION AND SHALL BE EQUIPPED WITH SUITABLE SCREW FASTENED COVERS. UNUSED OPEN KNOCKOUTS IN ALL BOXES SHALL BE PLUGGED WITH SUITABLE BLANKING DEVICES. ALL BOXES INSTALLED THAT DO NOT HAVE EQUIPMENT MOUNTED ON THEM SHALL BE PROVIDED WITH BLANK COVERS.
7. PROVIDE PERMANENT BARRIERS IN COMMON BOXES TO LIMIT VOLTAGE BETWEEN ADJACENT SWITCHES TO 300V OR LESS.
8. OUTLET BOXES SERVING PENDANT MOUNTED FIXTURES INSTALLED IN STRUCTURAL SLABS SHALL BE INSTALLED IN BOTTOM OF RIB SECTION OF STRUCTURAL ASSEMBLY UNLESS OTHERWISE INDICATED.
9. THE HEIGHT OF OUTLETS AND DEVICES SHALL BE OBTAINED FROM THE ENGINEER. ALL MOUNTING HEIGHTS TO BE IN ACCORDANCE WITH ADA AND NFPA GUIDELINES.
10. COORDINATE HEIGHT OF OUTLETS WITH DRAWINGS AND EQUIPMENT INSTALLATIONS DRAWINGS AND PROPERLY LOCATE HEIGHT OF ALL OUTLETS.
11. PLUG ALL UNUSED OPENINGS. USE THREADED PLUGS FOR CAST BOXES AND SNAP IN METAL PLUGS FOR SHEET METAL BOXES.
12. COMMON BOXES USED FOR GANG INSTALLATION WITH SWITCHES AND RECEPTACLES AND LOW VOLTAGE DEVICES SHALL INCLUDE BARRIERS BETWEEN THE DEVICES AND THE SWITCHES OR RECEPTACLES.

D. CLEANING
1. ALL PULL, JUNCTION, AND OUTLET BOXES SHALL BE THOROUGHLY CLEANED PRIOR TO INSTALLATION OF CONDUCTORS AND/OR WIRING DEVICES.

E. IDENTIFICATION
1. ALL BOXES SHALL BE PERMANENTLY MARKED WITH CIRCUIT NUMBER(S) AND VOLTAGE.

3.10 WIRING DEVICES AND DEVICE PLATES

A. INSTALLATION
1. INSTALL IN BOXES APPROVED FOR THE PURPOSE.
2. UTILIZE SCREW TERMINALS. DO NOT UTILIZE "PUSH-IN" TYPE SPEED TERMINALS.
3. RECEPTACLES INSTALLED VERTICALLY SHALL BE ORIENTED WITH THE GROUND PIN POSITION UP. RECEPTACLES INSTALLED HORIZONTALLY SHALL BE ORIENTED WITH THE NEUTRAL POSITION UP.
4. PROVIDE LABELLING FOR ALL NEW EQUIPMENT INDICATING SOURCE AND CIRCUIT NUMBER.
5. PROVIDE LABELLING FOR ALL EXISTING EQUIPMENT BEING MAINTAINED AND REFED INDICATING SOURCE AND PANEL NUMBER.

3.11 CONDUITS

A. UTILIZE ELECTRICAL METALLIC TUBING EXPOSED IN FINISHED AREAS AND MECHANICAL ROOMS, FOR ALL FEEDERS, ABOVE HUNG CEILINGS AND IN OTHER LOCATIONS NOT LISTED AS DAMP, WET, OR SUBJECT TO PHYSICAL ABUSE.
B. MAKE CONNECTIONS TO MOTORS AND EQUIPMENT WITH PVC JACKETED FLEXIBLE METALLIC CONDUIT AND LIQUID-TIGHT CONNECTORS.
C. ALL CONDUIT RUNS IN MECHANICAL ROOMS (UP TO 8'-0" AFF) AND EXTERIOR CONDUIT RUNS SHALL BE GALVANIZED STEEL CONDUIT (GRSC).
D. FOR EXPOSED RUNS IN AREAS SUBJECT TO WEATHER, ATTACHE SURFACE MOUNTED CONDUIT WITH CLAMPS. UTILIZE GALVANIZED STEEL STRAPS AND STAINLESS STEEL HARDWARE FOR ALL EXPOSED WORK IN DAMP LOCATIONS. ALLOW 1/16-INCH CLEARANCE AT ALL SUPPORTS FOR EXPANSION AND DEFLECTION.

3.12 HANGERS AND SUPPORTS

A. RACEWAYS SHALL BE SECURELY FASTENED TO THE STRUCTURE, WITH SUPPORT MECHANISMS SPACED AS DICTATED BY THE NEC OR AS SPECIFIED BELOW, WHICHEVER IS MORE STRINGENT:
1. 1/2" THRU 1": 6'-0"
2. 1 1/4" THRU 1 1/2": 8'-0"
3. 2" THRU 4": 10'-0"
4. FLEXIBLE METAL CONDUIT: 4'-6"
5. WIREWAYS: 5'-0"

B. SUPPORT EMT CONDUITS WITHIN 3'-0" OF EVERY JUNCTION BOX, PULLBOX OR TERMINATION. SUPPORT FLEXIBLE CONDUIT WITHIN 12" ON EACH SIDE OF EVERY OUTLET BOX OR FITTING.
C. SUPPORT CONDUITS BY PIPE STRAPS, WALL BRACKETS, HANGERS OR CEILING TRAPEZE. DO NOT WELD CONDUITS OR PIPE STRAPS TO STEEL STRUCTURES UNLESS SPECIFICALLY INDICATED.
D. FASTENERS ATTACHED TO CONCRETE SHALL BE VIBRATION AND SHOCK RESISTANT.

3.13 PANELBOARDS

A. INSTALLATION
1. PANELBOARDS SHALL BE INSTALLED IN LOCATIONS AS SHOWN ON THE DRAWINGS. PANELBOARDS SHALL BE MOUNTED SUCH THAT THE HANDLE OF THE HIGHEST CIRCUIT BREAKER DOES NOT EXCEED 6'-6" ABOVE FINISHED FLOOR. PANELBOARD CABINETS SHALL BE INSTALLED SURFACE MOUNTED AS INDICATED BY TRIM TYPE AS SHOWN ON THE DRAWINGS. TRIM TYPE AS SHOWN ON THE DRAWING. NO PIPING, DUCTWORK, OR OTHER MECHANICAL EQUIPMENT SHALL BE ALLOWED TO PASS THROUGH THE AREA EXTENDING FROM THE FLOOR TO THE STRUCTURAL CALLING WITH THE WIDTH EQUAL TO WIDTH OF THE PANEL PLUS 6" ON EITHER SIDE OF PANEL.
2. SURFACE MOUNTED PANELBOARDS SHALL BE MOUNTED INDEPENDENT OF THE WALL AND CONNECTING RACEWAYS. FURNISH STEEL CHANNEL SUPPORTS MOUNTED ON THE WALL AND ATTACH THE PANELBOARDS TO THIS SUPPORT. CONDUIT AND PULL BOX SHALL BE EMPTY AT TIME OF COMPLETION.
3. PANELBOARD DOORS SHALL CONTAIN HOLDERS FOR DIRECTORY CARDS WITH PLASTIC PROTECTOR. PANELBOARD DIRECTORY CARDS SHALL BE TYPEWRITTEN TO INDICATE AREAS AND/OR DEVICES SERVED BY EACH CIRCUIT. DIRECTORY CARDS SHALL BE EDITED AND MAINTAINED DURING THE COURSE OF CONSTRUCTION TO KEEP AN ACCURATE, UP TO DATE RECORD OF EACH FEEDER OR BRANCH CIRCUIT.
4. PANELBOARDS SHALL BE INSTALLED WITH CLEAR WORK SPACE AS REQUIRED BY NEC.
5. PANELBOARDS IN FINISHED AREAS, INSTALLED RECESSED IN WALLS, SHALL BE PRIME COATED ONLY, FOR FINISH PAINTING BY OTHERS.
6. PANELBOARDS LOCATED IN SPACES SUBJECT TO STORAGE SHALL HAVE THE CLEAR WORKING SPACE PER NFPA 70. "ELECTRIC ACCESS - NOT FOR STORAGE" SHALL BE PERMANENTLY MARKED ON THE FLOOR AND WALL ABOUT THE PANEL. PANELBOARDS SHALL NOT BE LOCATED IN EGRESS CORRIDORS.
7. PROVIDE BAKELITE NAMEPLATES WITH LABELING ON ALL ELECTRICAL EQUIPMENT. NAMEPLATES SHALL BE SECURED TO PANELBOARDS AND EQUIPMENT BY MEANS OF SELF TAPPING SCREWS OR POP RIVETS. BLACK BACKGROUND WITH WHITE LETTERS, 1" X 3" WITH 3/8" HIGH LETTERS ON 1/16" THICK PLATE FOR ALL NORMAL POWER SYSTEMS 1" X 3" WITH 3/8" LETTERS ON 1/16" THICK PLATE: RED ON WHITE FOR LIFE SAFETY, EMERGENCY, AND FIRE ALARM CONNECTED EQUIPMENT.

B. CLEANING
1. ALL PANELBOARDS SHALL BE COMPLETELY CLEANED PRIOR TO ENERGIZING.
2. CLEANING SHALL CONSIST OF VACUUMING ALL BUSES, ENCLOSURES (INSIDE AND OUT), ETC. AFTER VACUUMING IS COMPLETE, ALL EQUIPMENT SHALL BE WIPED DOWN. IF EQUIPMENT IS WET OR CONTAINS MOISTURE, IT SHALL BE THOROUGHLY DRIED BEFORE ENERGIZING.

C. TESTS
1. REFER TO PART 4 TESTING OF ELECTRICAL EQUIPMENT FOR TESTING REQUIREMENTS.

3.14 FUSES

A. GENERAL
1. FUSES SHALL NOT BE INSTALLED UNTIL EQUIPMENT IS READY TO BE ENERGIZED.
2. FINAL TESTINGS AND INSPECTIONS SHALL BE MADE PRIOR TO ENERGIZING OF EQUIPMENT.

B. INSPECTION
1. THE PROPER FUSE RATING SHALL BE DETERMINED FROM THE EQUIPMENT MANUFACTURER'S RECOMMENDATION FOR ALL EQUIPMENT REQUIRED TO BE PROTECTED WITH FUSES.
2. THE PROPER SIZE SWITCH WITH FUSE HOLDERS SHALL MATCH THE FUSE APPLICATION.

3.15 GROUNDING

A. THE REQUIRED EQUIPMENT GROUNDING CONDUCTORS AND STRAPS SHALL BE SIZED IN COMPLIANCE WITH NEC TABLE 250-122.
B. ALL EQUIPMENT GROUNDING CONDUCTORS SHALL BE PROVIDED WITH INSULATION EQUIVALENT TO THE INSULATION ON THE ASSOCIATED PHASE CONDUCTORS AND COLOR CODED AS DESCRIBED IN SYSTEMS IDENTIFICATION.
C. FLEXIBLE METALLIC CONDUIT EQUIPMENT CONNECTIONS SHALL BE PROVIDED WITH SUITABLE GREEN INSULATED GROUNDING CONDUCTORS CONNECTED TO APPROVED GROUNDING TERMINALS AT EACH END OF THE FLEXIBLE CONDUIT.
D. EACH ELECTRICAL EXPANSION FITTING SHALL BE PROVIDED WITH A BONDING JUMPER.
E. CONTINUITY BETWEEN ALL METALLIC AND NON-METALLIC RACEWAYS, WIREWAYS AND EQUIPMENT SHALL BE MAINTAINED.
F. ALL BRANCH CIRCUITS SHALL BE PROVIDED WITH A SEPARATE GROUNDING CONDUCTOR.

3.16 ELECTRICAL IDENTIFICATION

A. DEMOLITION
1. REMOVE LABELS AND/OR MODIFY DIRECTORY ASSOCIATED WITH THE CIRCUIT BEING DEMOLISHED AT THE SOURCE AND REPLACE WITH A LABEL IDENTIFYING IT AS A "SPARE".
2. LIGHTING AND RECEPTACLE OUTLET BOXES AND JUNCTION BOXES
3. BOXES SHALL BE IDENTIFIED WITH THE PANEL AND CIRCUIT DESIGNATION.

B. NEW WORK
1. PROVIDE LABELS FOR DEVICE PLATES ON ALL LIGHT SWITCHES AND RECEPTACLES. LABEL SHALL INDICATE PANEL FED FROM AND BRANCH CIRCUIT NUMBER.
2. PROVIDE LABLES FOR DISCONNECT SWTICHES AND VFDS. LABELS SHALL INDICATE PANEL FED FROM AND BRANCH CIRCUIT NUMBER.

C. TERMINAL BLOCKS
1. TERMINAL BLOCKS REQUIRING IDENTIFICATION NUMBERS SHALL BE NUMBERED BY THE CONTRACTOR WITH DESIGNATIONS SHOWN ON THE WIRING DIAGRAM USING NAMEPLATES. TERMINAL BLOCK NAMEPLATES SHALL BE INSTALLED AT THE TOP OF VERTICALLY MOUNTED TERMINAL BLOCKS AND AT THE END OF HORIZONTALLY MOUNTED TERMINAL BLOCKS. TERMINAL BLOCK MARKING STRIPS SHALL BE FILLED OUT BY THE CONTRACTOR USING PERMANENT INK AND SHALL INDICATE THE INDIVIDUAL TERMINAL POINT DESIGNATIONS SHOWN ON THE WIRING DIAGRAMS.

3.17 AS-BUILT DRAWINGS

A. A COMPLETE SET OF AS-BUILT DRAWINGS IN ELECTRONIC FORMAT (AUTOCAD) FOR THE PROJECT SHALL BE DELIVERED TO THE ENGINEER FOR APPROVAL AND ALL DEVIATIONS NOTED BY THE ENGINEER SHALL BE CORRECTED BY THE CONTRACTOR AND RETURNED TO THE ENGINEER FOR FURTHER DELIVERY TO THE OWNER.

PART 4 TESTING OF ELECTRICAL EQUIPMENT

4.1 PERFORMANCE

A. NOTIFY THE ENGINEER AT LEAST 48 HOURS PRIOR TO SCHEDULED PERFORMANCE OF TEST.
B. PERFORM ALL TESTS IN ACCORDANCE WITH NETA STANDARDS.

4.2 TEST PROCEDURES

A. MOLDED CASE CIRCUIT BREAKERS
1. VISUAL AND MECHANICAL INSPECTION
   (A) INSPECT COVER AND CASE, AND CHECK FOR BROKEN OR LOOSE TERMINALS.
   (B) CHECK FOR PROPER MOUNTING, CONDUCTOR SIZE AND FEEDER DESIGNATION.
   (C) OPERATE BREAKER TO CHECK OPERATION.
   (D) INSPECT CONNECTIONS FOR PROPER TORQUE IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
2. ELECTRICAL TESTS
   (A) PERFORM A CONTACT-RESISTANCE TEST
   (B) PERFORM AN INSULATION-RESISTANCE TEST AT 1000 VOLTS DC FROM POLE-TO-POLE AND FROM EACH POLE-TO-GROUND WITH BREAKER CLOSED AND ACROSS OPEN CONTACTS OF EACH PHASE.
   (C) PERFORM ADJUSTMENTS FOR FINAL SETTINGS IN ACCORDANCE WITH COORDINATION STUDY.
   (D) PERFORM LONG-TIME DELAY TIME-CURRENT CHARACTERISTIC TESTS BY PASSING 300 PERCENT RATED PRIMARY CURRENT THROUGH EACH POLE SEPARATELY UNLESS SERIES TESTING IS REQUIRED TO DEFEAT GROUND FAULT FUNCTIONS.
   (E) DETERMINE SHORT-TIME PICKUP AND DELAY BY PRIMARY CURRENT INJECTION
   (F) DETERMINE INSTANTANEOUS PICKUP CURRENT BY PRIMARY INJECTION.
3. ELECTRICAL TESTS
   (A) PERFORM RESISTANCE MEASUREMENTS THROUGH ALL BOLTED CONNECTIONS WITH LOW-RESISTANCE OHMMETER.
   (B) PERFORM INSULATION-RESISTANCE TESTS, WINDING-TO-WINDING AND WINDING-TO-GROUND PER NETA RECOMMENDATIONS.
   (C) PERFORM TURNS-RATIO TESTS AT ALL TAP POSITIONS.
   (D) PERFORM POWER-FACTOR/DISSIPATION FACTOR TEST ON WINDINGS AND BUSHINGS PER MANUFACTURER'S RECOMMENDATIONS.
   (E) MEASURE RESISTANCE OF EACH HIGH-VOLTAGE WINDING AND LOW-VOLTAGE WINDING IN EACH LOAD TAP-CHANGER POSITION.

B. CONDUCTORS (600V AND LESS)
1. VISUAL AND MECHANICAL INSPECTION
   (A) INSPECT FOR PHYSICAL DAMAGE AND PROPER CONNECTION IN ACCORDANCE WITH SINGLE-LINE DIAGRAM.
   (B) CABLE CONNECTIONS SHALL BE TORQUE TESTED TO MANUFACTURER'S RECOMMENDED VALUES.
   (C) VERIFY CABLE COLOR CODING WITH APPLICABLE SPECIFICATIONS AND THE NEC.
2. ELECTRICAL TESTS (ALL FEEDERS 100 AMPS AND LARGER)
   (A) PERFORM INSULATION-RESISTANCE TEST ON EACH CONDUCTOR WITH RESPECT TO GROUND AND ADJACENT CONDUCTORS. TEST DURATION SHALL BE A MINIMUM OF 1 MINUTE.
   (B) PERFORM RESISTANCE MEASUREMENTS THROUGH ALL BOLTED CONNECTIONS WITH LOW-RESISTANCE OHMMETER.
   (C) PERFORM CONTINUITY TEST TO INSURE CORRECT CABLE CONNECTION

C. GROUNDING SYSTEM TESTS
1. VISUAL AND MECHANICAL INSPECTION
   (A) VERIFY GROUND SYSTEM IS IN ACCORDANCE WITH DRAWINGS AND SPECIFICATIONS.
   (B) INSPECT GROUND SYSTEM FOR ADEQUATE TERMINATION AT ALL DEVICES.
2. ELECTRICAL TESTS
   (A) PERFORM FALL OF POTENTIAL TEST PER IEEE 81, SECTION 9.04 ON THE MAIN GROUNDING ELECTRODE OR SYSTEM
   (B) PERFORM THE 2-POINT METHOD TEST PER IEEE 81, SECTION 9.03 TO DETERMINE THE GROUND RESISTANCE BETWEEN THE MAIN GROUNDING SYSTEM AND ALL MAJOR ELECTRICAL EQUIPMENT FRAMES, SYSTEM NEUTRAL AND/OR DERIVED NEUTRAL POINTS.
3. TEST VALUES
   (A) THE MAIN GROUND ELECTRODE SYSTEM RESISTANCE TO GROUND SHALL BE NO GREATER THAN 5 OHMS. PROVIDE ADDITIONAL GROUND RODS REQUIRED TO ACHIEVE 5 OHMS RESISTANCE VALUE.
   (B) INVESTIGATE POINT-TO-POINT RESISTANCE VALUES WHICH EXCEED 0.5 OHMS.
   (C) THE CONTRACTOR SHALL CORRECT OR REPLACE ANY NOMINAL CURRENT-CARRYING CIRCUIT WHICH IS DEFECTIVE OR GROUNDED, AND HE SHALL ALSO CORRECT ALL OTHER TROUBLES ENCOUNTERED BY THESE TESTS. ALL DEFECTS WHETHER THROUGH FAULTY WORKMANSHIP OR MATERIAL FURNISHED SHALL BE CORRECTED UNDER THIS SECTION, AT THE CONTRACTOR'S EXPENSE.

PART 5 POWER SYSTEM STUDIES

5.1 PROVISIONS INCLUDED

A. EXAMINE ALL DRAWINGS AND ALL OTHER SECTIONS OF THESE SPECIFICATIONS FOR REQUIREMENTS WHICH AFFECT WORK UNDER THIS SECTION WHETHER OR NOT SUCH WORK IS SPECIFICALLY MENTIONED IN THIS SECTION.
B. COORDINATE WORK WITH THAT OF ALL OTHER TRADES AFFECTING OR AFFECTED BY WORK OF THIS SECTION. COOPERATE WITH SUCH TRADES TO ENSURE THE STEADY PROGRESS OF ALL WORK UNDER THE CONTRACT.

5.2 SCOPE OF WORK

A. SHORT CIRCUIT, COORDINATION AND ARC FLASH STUDIES SHALL BE PERFORMED BY THE CONTRACTOR. THE STUDIES SHALL BE SUBMITTED TO THE ENGINEER PRIOR TO RECEIVING FINAL APPROVAL OF THE DISTRIBUTION EQUIPMENT SHOP DRAWINGS AND/OR PRIOR TO RELEASE OF EQUIPMENT FOR MANUFACTURE. IF FORMAL COMPLETION OF THE STUDIES MAY CAUSE DELAY IN EQUIPMENT MANUFACTURE, APPROVAL FROM THE ENGINEER MAY BE OBTAINED FOR A PRELIMINARY SUBMITTAL OF SUFFICIENT STUDY DATA TO ENSURE THAT THE SELECTION OF DEVICE RATINGS AND CHARACTERISTICS WILL BE SATISFACTORY.
B. THE STUDIES SHALL INCLUDE ALL NEW PORTIONS OF THE ELECTRICAL DISTRIBUTION SYSTEM AS FOLLOWS:
1. PANEL MDP AND PANEL MH1.
2. A SAMPLE OF THE LARGEST AND THE SMALLEST BRANCH CIRCUIT IN EACH PANELBOARD SHALL BE INCLUDED.
C. WHERE THE NEW DISTRIBUTION SYSTEM CONNECTS TO EXISTING DISTRIBUTION, THE STUDIES SHALL INCLUDE THE EXISTING SERVICE TRANSFORMER AND THE EXISTING SECONDARY MAIN CIRCUIT BREAKER(S).
D. THE STUDY SHALL BE PERFORMED AND SEALED BY A REGISTERED PROFESSIONAL ELECTRICAL ENGINEER LICENSED IN THE COMMONWEALTH OF MASSACHUSETTS. THIS FIRM SHALL BE ENGAGED IN FIELD CALIBRATION, SETTINGS AND TESTING OF PROTECTIVE DEVICES. THIS FIRM SHALL HAVE BEEN REGULARLY ENGAGED IN SUCH SERVICES FOR A MINIMUM OF TEN (10) YEARS.
E. THE CONTRACTOR SHALL COORDINATE AND PROVIDE THE REQUIRED DATA FOR PREPARATION OF THE STUDIES TO THE ENGINEER PERFORMING THE STUDIES. THE CONTRACTOR SHALL OBTAIN THE REQUIRED DATA INFORMATION FROM THE SWITCHBOARD/SWITCHGEAR, PANELBOARD AND TRANSFORMER MANUFACTURER IMMEDIATELY AFTER AWARD OF THE CONTRACT.
F. THE CONTRACTOR SHALL SUBMIT THE FINAL STUDY REPORT FOR REVIEW AND APPROVAL BY THE OWNERS ENGINEER.

5.3 STUDY REPORT

A. THE RESULTS OF THE POWER SYSTEM STUDY SHALL BE SUMMARIZED IN A FINAL REPORT AND SHALL BE PERFORMED USING AFAULT AND CAPTOR (SKM SYSTEM ANALYSIS) SOFTWARE. THREE (3) BOUND COPIES OF THE FINAL REPORT AND THE COMPLETE DATA FILES ON DISKETTE SHALL BE SUBMITTED. THE DATA FILES SHALL BE CAPABLE OF BEING ACCESSED AND MODIFIED BY THE OWNER AND BECOME THE PROPERTY OF THE OWNER.
B. THE REPORT SHALL INCLUDE THE FOLLOWING SECTIONS:
1. DESCRIPTION, PURPOSE, BASIS AND SCOPE OF THE STUDY AND A SINGLE-LINE DIAGRAM OF THAT PORTION OF THE POWER SYSTEM WHICH IS INCLUDED WITHIN THE SCOPE OF THE STUDY.
2. TABULATIONS OF CIRCUIT BREAKER, FUSE AND OTHER PROTECTIVE DEVICE RATINGS VERSUS CALCULATED SHORT CIRCUIT DUTIES, AND COMMENTARY REGARDING SAME.
3. PROTECTIVE DEVICE TIME VS. CURRENT COORDINATION CURVES, TABULATIONS OF RELAY AND CIRCUIT BREAKER TRIP SETTINGS, FUSE SELECTION, AND COMMENTARY REGARDING SAME.
4. FAULT CURRENT CALCULATIONS INCLUDING A DEFINITION OF TERMS AND GUIDE FOR INTERPRETATION OF COMPUTER PRINTOUT.
5. ARC FLASH STUDY INDICATING THE INCIDENT ENERGY AT EACH PIECE OF EVALUATED EQUIPMENT. EQUIPMENT CALCULATED ABOVE 8 CAL/SQ-M SHALL BE PROVIDED WITH RECOMMENDATIONS TO REDUCE THE INCIDENT ENERGY.

5.4 REFERENCE STANDARDS

A. APPLICABLE PROVISIONS OF THE FOLLOWING CODES AND TRADE STANDARD PUBLICATIONS SHALL APPLY TO THE WORK OF THIS SECTION AND ARE HEREBY INCORPORATED INTO, AND MADE A PART OF, THE CONTRACT DOCUMENTS:
1. NFPA 70
2. NFPA 70E
3. IEEE: INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS

5.5 SHORT CIRCUIT STUDY AND PROTECTIVE DEVICE EVALUATION STUDY

A. THE SHORT CIRCUIT STUDY SHALL BE PERFORMED WITH THE AID OF A DIGITAL COMPUTER PROGRAM AND SHALL BE IN ACCORDANCE WITH THE LATEST APPLICABLE IEEE AND ANSI STANDARDS.
B. THE STUDY INPUT DATA SHALL INCLUDE THE SHORT CIRCUIT CONTRIBUTION, RESISTANCE AND REACTANCE COMPONENTS OF THE BRANCH IMPEDANCES, THE X/R RATIOS, BASE QUANTITIES SELECTED, AND OTHER SOURCE IMPEDANCES.
C. SHORT CIRCUIT CLOSE AND LATCH DUTY VALUES AND INTERRUPTING DUTY VALUES SHALL BE CALCULATED ON THE BASIS OF ASSUMED 3-PHASE BOLTED SHORT CIRCUITS AT THE DISTRIBUTION PANELBOARD, PERTINENT BRANCH CIRCUIT PANEL AND OTHER SIGNIFICANT LOCATIONS THROUGH THE SYSTEM. THE SHORT CIRCUIT TABULATIONS SHALL INCLUDE SYMMETRICAL FAULT CURRENTS AND X/R RATIOS. FOR EACH FAULT LOCATION, THE TOTAL DUTY ON THE BUS, AS WELL AS THE INDIVIDUAL CONTRIBUTION FROM EACH CONNECTED BRANCH, SHALL BE LISTED WITH ITS RESPECTIVE X/R RATIO.
D. A PROTECTIVE DEVICE EVALUATION STUDY SHALL BE PERFORMED TO DETERMINE THE ADEQUACY OF CIRCUIT BREAKERS AND FUSES BY TABULATING AND COMPARING THE SHORT CIRCUIT RATINGS OF THESE DEVICES WITH THE CALCULATED FAULT CURRENTS. APPROPRIATE MULTIPLYING FACTORS BASED ON SYSTEM X/R RATIOS AND PROTECTIVE DEVICE RATING STANDARDS SHALL BE APPLIED. ANY PROBLEM AREAS OR INADEQUACIES IN THE EQUIPMENT DUE TO SHORT CIRCUIT CURRENTS SHALL BE PROMPTLY BROUGHT TO THE ENGINEER'S ATTENTION.

5.6 PROTECTIVE DEVICE COORDINATION STUDY

A. A PROTECTIVE DEVICE COORDINATION STUDY SHALL BE PERFORMED TO PROVIDE THE NECESSARY CALCULATIONS AND LOGIC DECISIONS REQUIRED TO SELECT OR TO CHECK THE SELECTION OF POWER FUSE RATINGS, PROTECTIVE RELAY CHARACTERISTICS AND SETTINGS, RATIOS AND CHARACTERISTICS OF ASSOCIATED CURRENT TRANSFORMERS, AND LOW VOLTAGE BREAKER TRIP CHARACTERISTICS AND SETTINGS. THE STUDIES SHALL BE IN ACCORDANCE WITH THE LATEST APPLICABLE IEEE AND ANSI STANDARDS.
B. THE COORDINATION STUDY SHALL INCLUDE ALL LOW VOLTAGE CLASSES OF EQUIPMENT FROM THE BUILDING OR PLANT SERVICE PROTECTIVE DEVICES DOWN TO AND INCLUDING THE LARGEST RATED DEVICE IN THE LOW VOLTAGE MOTOR CONTROL CENTERS AND PANELBOARDS. THE PHASE AND GROUND OVERCURRENT PROTECTION SHALL BE INCLUDED AS WELL AS SETTINGS OF ALL OTHER ADJUSTABLE PROTECTIVE DEVICES.
C. THE TIME-CURRENT CHARACTERISTICS OF THE SPECIFIED PROTECTIVE DEVICES SHALL BE DRAWN ON KEUFFEL AND ESSER LOG-LOG PAPER. THE PLOTS SHALL INCLUDE COMPLETE TITLES, REPRESENTATIVE ONE-LINE DIAGRAM AND LEGENDS, SIGNIFICANT MOTOR STARTING CHARACTERISTICS, COMPLETE PARAMETERS OF TRANSFORMERS, COMPLETE OPERATING BANDS OF LOW VOLTAGE CIRCUIT BREAKER TRIP CURVES AND FUSES. THE COORDINATION PLOTS SHALL INDICATE THE TYPES OF PROTECTIVE DEVICES SELECTED, PROPOSED RELAY TAPS, TIME DIAL AND INSTANTANEOUS TRIP SETTINGS, TRANSFORMER MAGNETIZING INRUSH AND ANSI TRANSFORMER WITHSTAND PARAMETERS, CABLE THERMAL OVERCURRENT WITHSTAND LIMITS AND SIGNIFICANT SYMMETRICAL AND ASYMMETRICAL FAULT CURRENTS. ALL RESTRICTIONS OF THE CEC SHALL BE ADHERED TO AND PROPER COORDINATION INTERVALS AND SEPARATION OF CHARACTERISTIC CURVES SHALL BE MAINTAINED. THE COORDINATION PLOTS FOR PHASE AND GROUND PROTECTIVE DEVICES SHALL BE PROVIDED ON A SYSTEM BASIS. A SUFFICIENT NUMBER OF SEPARATE CURVES SHALL BE USED TO CLEARLY INDICATE THE COORDINATION ACHIEVED.
D. THE SELECTION AND SETTINGS OF THE PROTECTIVE DEVICES SHALL BE PROVIDED SEPARATELY IN A TABULATED FORM LISTING CIRCUIT IDENTIFICATION, IEEE DEVICE NUMBER, CURRENT TRANSFORMER RATIOS AND CONNECTION, MANUFACTURER AND TYPE, RANGE OF ADJUSTMENT AND RECOMMENDED SETTINGS. A TABULATION OF THE RECOMMENDED POWER FUSE SELECTION SHALL BE PROVIDED FOR THE MEDIUM VOLTAGE FUSES WHERE APPLIED IN THE SYSTEM. ANY DISCREPANCIES, PROBLEM AREAS, OR INADEQUACIES SHALL BE PROMPTLY BROUGHT TO THE ENGINEER'S ATTENTION.

5.7 ARC FLASH HAZARD ANALYSIS

A. THE ARC-FLASH HAZARD ANALYSIS SHALL BE PERFORMED WITH THE AID OF COMPUTER SOFTWARE INTENDED FOR THIS PURPOSE IN ORDER TO CALCULATE ARC-FLASH INCIDENT ENERGY (AFIE) LEVELS AND FLASH PROTECTION BOUNDARY DISTANCES.
B. THE ARC-FLASH HAZARD ANALYSIS SHALL BE PERFORMED IN CONJUNCTION WITH A SHORT-CIRCUIT ANALYSIS AND A TIME-CURRENT COORDINATION ANALYSIS.
C. RESULTS OF THE ANALYSIS SHALL BE SUBMITTED IN TABULAR FORM, AND SHALL INCLUDE DEVICE OR BUS NAME, BOLTED FAULT AND ARCING FAULT CURRENT LEVELS, FLASH PROTECTION BOUNDARY DISTANCES, PERSONAL-PROTECTIVE EQUIPMENT CLASSES AND AFIE LEVELS.
D. THE ANALYSIS SHALL BE PERFORMED UNDER WORST-CASE ARC-FLASH CONDITIONS, AND THE FINAL REPORT SHALL DESCRIBE, WHEN APPLICABLE, HOW THESE CONDITIONS DIFFER FROM WORST-CASE BOLTED FAULT CONDITIONS.
E. THE ARC-FLASH HAZARD ANALYSIS SHALL BE PERFORMED BY A REGISTERED PROFESSIONAL ENGINEER.
F. THE ARC-FLASH HAZARD ANALYSIS SHALL BE PERFORMED IN COMPLIANCE WITH IEEE STANDARD 1584-2002, THE IEEE *GUIDE FOR PERFORMING ARC-FLASH CALCULATIONS.*
G. THE ARC-FLASH HAZARD ANALYSIS SHALL INCLUDE RECOMMENDATIONS FOR REDUCING AFIE LEVELS AND ENHANCING WORKER SAFETY.
H. THE PROPOSED VENDOR SHALL DEMONSTRATE EXPERIENCE WITH ARC-FLASH HAZARD ANALYSIS BY SUBMITTING NAMES OF AT LEAST TEN ACTUAL ARC-FLASH HAZARD ANALYSES IT HAS PERFORMED IN THE PAST YEAR.
I. THE PROPOSED VENDOR SHALL DEMONSTRATE CAPABILITIES IN PROVIDING EQUIPMENT, SERVICES, AND TRAINING TO REDUCE ARC-FLASH EXPOSURE AND TRAIN WORKERS IN ACCORDANCE WITH NFPA 70E AND OTHER APPLICABLE STANDARDS.
J. THE PROPOSED VENDOR SHALL DEMONSTRATE EXPERIENCE IN PROVIDING EQUIPMENT LABELS IN COMPLIANCE WITH NEC-2002 SECTION 110 AND ANSI Z535.4 TO IDENTIFY AFIE AND APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT CLASSES.

ELECTRICAL GENERAL NOTES

1. EACH CONTRACTOR, PROPOSER, SUPPLIER AND/OR MANUFACTURER SHALL REFER TO ALL DOCUMENTS PERTAINING TO THIS PROJECT AND COORDINATE ACCORDINGLY SO AS TO ENSURE ADEQUACY OF FIT, COMPLIANCE WITH SPECIFICATIONS, PROPER VOLTAGE AND CURRENT CHARACTERISTICS TO AVOID CONFLICT WITH ANY OTHER BUILDINGS SYSTEMS. VERIFY SAME WITH SHOP DRAWINGS.
2. ADDITIONAL ELECTRICAL REQUIREMENTS MAY BE SHOWN ON PLANS FROM OTHER DISCIPLINES IN THIS SET. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW ALL PLANS AND SPECIFICATIONS FOR A COMPLETE UNDERSTANDING OF THE PROJECT REQUIREMENTS.
3. WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF ALL LOCAL, STATE, AND NATIONAL CODES. INCLUDING BUT NOT LIMITED TO NFPA 70 (NEC), NFPA 72, INTERNATIONAL BUILDING CODES, ETC. IN ADDITION, OBSERVE ALL APPLICABLE RULES AND REGULATIONS THAT MAY APPLY TO THE WORK UNDER THIS CONTRACT FROM CITY, COUNTY, LOCAL, STATE, FEDERAL, MUNICIPALITY, UTILITY COMPANY, OSHA, ETC.
4. CONTRACTOR SHALL FOLLOW SEISMIC RESTRAINT AND DESIGN REQUIREMENTS CONTAINED IN LATEST ADOPTED STATE AND INTERNATIONAL BUILDING CODES, WITH ALL AMENDMENTS AS ADOPTED BY THE CURRENT LEGISLATION. REFER TO ELECTRICAL AND STRUCTURAL SPECIFICATIONS FOR ADDITIONAL INFORMATION.
5. ADVISE THE ENGINEER OF ANY CONFLICTS, ERRORS, OMISSIONS, ETC. AT LEAST TEN DAYS PRIOR TO BID DATE, TO ALLOW CLARIFICATION BY WRITTEN ADDENDUM.
6. WHERE CONFLICTS ARE FOUND BETWEEN DRAWINGS, DETAILS, OR SPECIFICATIONS, THE MORE STRINGENT REQUIREMENT SHALL APPLY. NOTIFY ARCHITECT OF DISCREPANCY IN WRITING.
7. DEVIATION FROM SPECIFICATIONS OR PLANS REQUIRES PRIOR WRITTEN APPROVAL FROM THE ENGINEERS AND MUST BE SUBMITTED IN WRITING NO LATER THAN TEN DAYS PRIOR TO THE BID DATE.
8. ALL ELECTRICAL COMPONENTS OR EQUIPMENT SHALL BE LISTED AND LABELED BY UNDERWRITER'S LABORATORIES OR OTHER APPROVED LISTING AGENCY. APPROVAL AND LABELING OF INDIVIDUAL COMPONENTS ON AN ASSEMBLY IS NOT ACCEPTABLE AS MEETING THIS REQUIREMENT, UNLESS WAIVED BY THE ENGINEER IN WRITING.
9. ALL MATERIALS FURNISHED AND ALL WORK INSTALLED SHALL COMPLY WITH THE CURRENT EDITION OF THE NATIONAL ELECTRICAL CODES, NATIONAL FIRE CODES OF THE NATIONAL FIRE PROTECTION ASSOCIATION, THE REQUIREMENTS OF LOCAL UTILITY COMPANIES, AND WITH THE REQUIREMENTS OF ALL GOVERNMENTAL AGENCIES OR DEPARTMENTS HAVING JURISDICTION. IF ANY CONFLICTS OR DISCREPANCIES OCCUR THE MOST STRINGENT SHALL APPLY.
10. MOUNTING HEIGHTS FOR WALL MOUNTED DEVICES INDICATED ABOVE FINISHED FLOOR ARE TO CENTER OF DEVICE UNO. MOUNTING HEIGHTS TO CEILING SUSPENDED DEVICES ARE TO BOTTOM OF DEVICE UNO. WHERE MOUNTING HEIGHTS ARE NOT INDICATED OR ARE IN CONFLICT WITH ANY OTHER BUILDING SYSTEM, CONTACT THE ENGINEER BEFORE AFFECTING INSTALLATION. REFER ALSO TO ARCHITECTURAL INTERIOR AND EXTERIOR ELEVATIONS, CEILING HEIGHTS AND OTHER DETAILS OF THESE DOCUMENTS, AS APPLICABLE.
11. DO NOT SCALE FROM DRAWINGS, AS PRINTING DISTORTS SCALE. WORK SHALL BE LAID OUT FROM DIMENSIONED DRAWINGS, OR DIMENSIONS SUPPLIED TO THE CONTRACTOR.
12. REFER TO ARCHITECTURAL WALL ELEVATIONS (WHERE GIVEN) FOR HEIGHTS AND MOUNTING RELATIONSHIP OF OUTLETS AND FURNITURE, CASEWORK, AND/OR EQUIPMENT. ADDITIONAL OUTLETS MAY BE SHOWN ON ARCHITECTURAL DRAWINGS AND SHALL BE INCLUDED IN THE CONTRACT.
13. FLUSH OR PEDESTAL TYPE FLOOR OUTLETS/BOXES, AS INDICATED ON PLAN, SHALL BE LOCATED BY DIMENSIONS PROVIDED BY THE ARCHITECT, UNLESS OTHERWISE SHOWN ON PLANS. IF IN DOUBT, CONTACT THE ENGINEER PRIOR TO ROUGHING-IN ANY WORK.
14. INSTALL EQUIPMENT, MATERIALS, ETC. IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND DIRECTIONS. IF IN CONFLICT WITH THE DESIGN INDICATED IN CONTRACT DOCUMENTS, ADVISE THE ENGINEER PRIOR TO INSTALLATION FOR CLARIFICATION.
15. THE CONSTRUCTION MANAGER, GENERAL CONTRACTOR, OR WHOMEVER HOLDS THE PRIME CONTRACT(S) FOR THIS CONSTRUCTION IS RESPONSIBLE FOR THE COORDINATION, APPEARANCE, SCHEDULING AND TIMELINESS OF THE WORK OF ALL TRADES, CONTRACTORS, SUPPLIERS, INSTALLERS, ETC. POOR OR UNTIMELY WORK ON THE PART OF ANY SUBCONTRACTOR SHALL BE RESOLVED BY THE PARTY WHO ENGAGED THEM ON THIS PROJECT.
16. THE PURPOSE AND INTENT OF ALL OF THE DOCUMENTS PERTAINING TO THIS PROJECT IS TO PROVIDE A COMPLETE, FUNCTIONAL, SAFE, LIKE-NEW FACILITY. ANYTHING LESS SHALL BE UNACCEPTABLE.
17. ALL SYSTEMS, EQUIPMENT AND MATERIALS ARE TO BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. WORK NOT MEETING THIS CRITERION SHALL BE REMOVED AND REINSTALLED SATISFACTORILY. FINAL DETERMINATION OF THE ACCEPTABILITY OF THE QUALITY OF WORK RESIDES WITH THE ENGINEER
18. ALL WORK, MATERIALS, EQUIPMENT, ETC. SHALL BE FULLY GUARANTEED FOR ONE FULL CALENDAR YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION AS DOCUMENTED BY THE ENGINEER, UNLESS LONGER WARRANTY PERIODS FOR EQUIPMENT ARE SPECIFIED.
19. ALL WORK SHALL BE CONCEALED UNLESS SPECIFICALLY INDICATED TO BE EXPOSED, OR REQUIRED TO BE EXPOSED. IF IN DOUBT, CONTACT THE ENGINEER FOR CLARIFICATIONS PRIOR TO INSTALLING ANY SUCH WORK.
20. UNLESS OTHERWISE SPECIFIED OR INDICATED, ALL EQUIPMENT AND/OR MATERIALS WITHIN OCCUPIED SPACES OR EXPOSED TO VIEW ON THE BUILDING EXTERIOR SHALL BE PRIMED AND FINISHED SO AS TO COMPLEMENT ADJACENT SURFACE, UNLESS OTHERWISE NOTED. COORDINATE WORK AND COLORS WITH ARCHITECT.
21. WHERE PENETRATING ROOFING MEMBRANE OR OTHER MATERIALS USED FOR WEATHERPROOFING THE BUILDING, MAKE SUCH PENETRATION IN A WAY THAT WILL NOT VOID OR DIMINISH THE ROOFING WARRANTY OR INTEGRITY IN ANYWAY. COORDINATE ALL SUCH PENETRATIONS WITH THE ROOFING MANUFACTURER AND ARCHITECT.
22. CEILING-MOUNTED ELECTRICAL DEVICES SHALL BE CENTERED IN 2'X2' CEILING TILE AND INSTALLED CENTERED ON 2' DIMENSION OF 2'X4' TILE AND ON CENTERLINE OR A QUARTER POINT ON 4' DIMENSION.
23. PROVIDE DETAILED SHOP DRAWINGS TO ENGINEER PRIOR TO PURCHASING OR INSTALLING ANY EQUIPMENT DEVIATIONS IN SIZES, CAPACITIES, FIT, FINISH, ETC. FOR EQUIPMENT FROM THAT PRIME SPECIFIED SHALL BE THE RESPONSIBILITY OF THE PURCHASER OF THAT EQUIPMENT. ANY PROVISIONS REQUIRED TO ACCOMMODATE A DEVIATION, WHETHER APPROVED BY THE ENGINEER OR NOT, SHALL BE THE RESPONSIBILITY OF THE PURCHASER.
24. WHERE FIRE-RATED CEILING ASSEMBLIES ARE NOTED, PROVIDE UL-LISTED FIRE-RATED GYPSUM BOARD OR PRE-MANUFACTURED ENCLOSURES ABOVE LUMINAIRES, CEILING DEVICES, ETC. IN OR ON CEILING, AS REQUIRED TO MAINTAIN CEILING RATINGS.
25. DO NOT RECESS PANELBOARD TUBS OR OTHER FLUSH-MOUNTED EQUIPMENT IN WALLS THAT HAVE A FIRE RATING. NO INSTALLATION SHALL DIMINISH OR VOID FIRE RESISTIVE RATINGS IN ANYWAY.
26. COORDINATE THE LOCATION OF DRAINS, ELECTRICAL OUTLETS, GAS OUTLETS, ETC. WITH ALL CASEWORK, KITCHEN EQUIPMENT, MECHANICAL ROOM EQUIPMENT, ETC. PRIOR TO COMMENCING INSTALLATION. WORK NOT SO COORDINATED SHALL BE REMOVED AND PROPERLY INSTALLED AT THE EXPENSE OF THE RESPONSIBLE CONTRACTOR(S).
27. ALL OFFSETS, TURNS, FITTINGS, TRIM, DETAIL, ETC. MAY NOT BE INDICATED, BUT SHALL BE PROVIDED AS REQUIRED. ADDITIONAL ALLOWANCES SHALL BE INCLUDED FOR SAME AT EACH PROPOSER'S DISCRETION.
28. INSTALL NO PIPING, CONDUIT, DUCTWORK, ETC. IN A LOCATION OR IN A MANNER WHICH WILL ALLOW FREEZING OR THE COLLECTION OF CONDENSATION THEREON. IF IN DOUBT, CONTACT THE ENGINEER.
29. ALL WIRING SYSTEMS SHALL BE INSTALLED WITH A MINIMUM OF SPLICES. CONDUCTORS, WHETHER SINGLE OR MULTI-PAIR, SHALL BE INSTALLED CONTINUOUS INSOFAR AS POSSIBLE FROM TERMINAL POINT TO TERMINAL POINT.
30. NO CONDUIT, SUPPORTS, ETC. SHALL BE RUN THROUGH ACCESS CLEARANCES OF EQUIPMENT BY OTHER TRADES (I.E. VAV BOXES). COORDINATE WITH ALL TRADES PRIOR TO CONSTRUCTION.
31. ALL SUPPORTS FOR EQUIPMENT, DEVICES OR FIXTURES SHALL BE UNIQUE, DIRECTLY FROM THE BUILDING STRUCTURE. DO NOT SUPPORT WORK FROM OTHER TRADES EQUIPMENT OR SUPPORTS WITHOUT WRITTEN PERMISSION FROM THE ENGINEER AND CONSENT OF THE OTHER TRADE, IN WRITING.
32. WHERE BACKBOXES ARE LOCATED IN THE SAME VERTICAL CHANNEL/STUD SPACE ON OPPOSITE SIDES OF THE SAME WALL, PROVIDE SOUND-INSULATING PUTTY AROUND BOXES AS REQUIRED TO ELIMINATE SOUND TRANSMISSION FROM ROOM TO ROOM.
33. JUNCTION BOXES LOCATED ABOVE ACCESSIBLE CEILINGS SHALL BE LOCATED NO MORE THAN 36" ABOVE CEILING LEVEL. LABEL EACH BOX IN AREA OF WORK WITH A PERMANENT MARKER OR IN ACCORDANCE WITH SPECIFICATIONS, WHICHEVER IS MORE STRINGENT.
34. ANY VIBRATING, OSCILLATING OR OTHER NOISE OR MOTION PRODUCING EQUIPMENT SHALL BE ISOLATED FROM SURROUNDING SYSTEMS IN AN APPROVED MANNER. NOISY OR STRUCTURALLY DAMAGING INSTALLATIONS SHALL BE SATISFACTORILY REPLACED OR REPAIRED AT THE INSTALLING CONTRACTORS' EXPENSE. THE FINAL DECISION ON THE SUITABILITY OF A PARTICULAR INSTALLATION'S ACCEPTABILITY SHALL BE THAT OF THE ENGINEER.
35. CHECK ALL THREE PHASE MOTORS WITH A PHASE ROTATION METER, PRIOR TO PLACING IN SERVICE.
36. ALL ITEMS HAVING KEYED LOCKS/OPERATORS SHALL HAVE CORED LOCKS/OPERATORS. ALL KEYING SHALL MATCH THE OWNER'S EXISTING KEY-WAYS. COORDINATE EXACT REQUIREMENTS WITH OWNER PRIOR TO CONSTRUCTION.
37. NOISY WORK, WORK OUTSIDE CONSTRUCTION BARRIERS, WORK IN OCCUPIED AREAS, ETC. SHALL BE PERFORMED AFTER HOURS OR ON WEEKENDS. COORDINATE EXACT SCHEDULING WITH FACILITY PRIOR TO CONSTRUCTION.
38. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING REQUIRED FOR HIS WORK. ALL CUTTING AND PATCHING SHALL BE IN ACCORDANCE WITH THE ARCHITECT'S STANDARDS FOR SUCH WORK.
39. THE CONTRACTOR IS RESPONSIBLE FOR ALL UTILITY COMPANY FEES, CASH CONTRIBUTIONS OR OTHER COSTS THAT THE UTILITY COMPANY MAY REQUIRE TO COMPLETE THEIR WORK. (ELECTRIC, TELEPHONE, TELEVISION, DATA, ETC.).
40. ALL CONTRACTORS SHALL EXERCISE EXTREME CARE IN THE COURSE OF THEIR WORK SO AS TO ENSURE THAT THEY DO NOT INTERRUPT ANY EXISTING SERVICE OR SUB-SERVICE FOR SAFETY PURPOSES. PAY PARTICULAR ATTENTION TO THIS PRECAUTION RELATIVE TO NATURAL GAS AND ELECTRICAL LINES. VERIFY THE LOCATION, SIZE, TYPE, ETC. OF EACH UNDERGROUND OR OVERHEAD UTILITY. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL FEDERAL, STATE AND/OR LOCAL RULES, REGULATIONS, STANDARD AND SAFETY REQUIREMENTS. UTILITIES SHALL BE INSTALLED IN ACCORDANCE WITH THE APPLICABLE MUNICIPALITY OR UTILITY COMPANY STANDARDS. IN ALL CASES, THE MOST STRINGENT REQUIREMENT SHALL APPLY.
41. INTERRUPTION OF ANY EXISTING SERVICES SHALL BE COORDINATED WITH THE OWNER, GENERAL CONTRACTOR, UTILITY COMPANY AS NECESSARY, AND THE ARCHITECT, AT LEAST TWO WEEKS IN ADVANCE OF ANTICIPATED INTERRUPTION. A SCHEDULE FOR THESE OUTAGES SHALL BE DEVELOPED AND AGREED UPON BETWEEN THE PARTIES MENTIONED TO AVOID UNNECESSARY INCONVENIENCE TO THE OWNER OR ANY AFFECTED PARTY. NOTIFY THE UTILITY COMPANY OF ANY ANTICIPATED SERVICES REQUIRED TWO WEEKS IN ADVANCE, IN WRITING. IF UTILITY COMPANY REQUIRES A LONGER NOTIFICATION PERIOD, SO PROVIDE.
42. WHERE INTERRUPTING AN EXISTING UTILITY OR SERVICE DELIBERATELY OR ACCIDENTALLY, THE RESPONSIBLE CONTRACTOR SHALL WORK CONTINUOUSLY AS NEEDED TO RESTORE SAME, PROVIDING PREMIUM TIME AS NEEDED.
43. AS APPLICABLE, REFER TO ARCHITECTURAL PHASING PLANS AND PHASING BOUNDARIES ON THESE DRAWINGS FOR SEQUENCING OF WORK, FULL EXTENT OF AREAS INVOLVED, EXTENT OF CEILING WORK, ETC. PROVIDE TEMPORARY CONNECTIONS FOR CIRCUITS AND WORK AS REQUIRED TO MAINTAIN SEQUENCE OF THE WORK FROM PHASE TO PHASE. PROVIDE ALL REQUIRED INCREMENTAL INSPECTIONS, CERTIFICATIONS, ETC. AND ALL TEMPORARY SERVICES AS REQUIRED BY OWNER TO ACCOMPLISH THE PHASING PLAN.

ELECTRICAL DEMOLITION NOTES

1. DOTTED LINES INDICATE ITEMS FOR REMOVAL (UON) AND GRAY SOLID LINES INDICATE EXISTING ITEMS TO REMAIN.
2. DEVICES INDICATED WITH AN "XTR" SHALL BE RELOCATED. REMOVE, PROTECT, AND REINSTALL IN NEW LOCATION INDICATED ON NEW WORK PLANS. INTERCEPT AND EXTEND ALL EXISTING CABLING TO NEW LOCATION. CLEAN AND RE-LAMP RELOCATED LUMINAIRES.
3. THE CONTRACTOR SHALL MAINTAIN THE CONTINUITY OF EXISTING CIRCUITS THAT CONTAIN DEVICES OR EQUIPMENT THAT ARE TO REMAIN. WHEN DEMOLITION OF AN ELECTRICAL DEVICE (OR CIRCUIT) IS INDICATED ON THE DRAWINGS: THE CONTRACTOR SHALL ENSURE THAT OTHER DEVICES OR EQUIPMENT "UPSTREAM" OR "DOWNSTREAM" ON THE CIRCUITS SHALL REMAIN IN "PRE- DEMOLITION" WORKING ORDER. "LEFT-OVER" CIRCUIT BREAKERS SHALL REMAIN, BE SWITCHED TO OFF POSITION, AND BE LABELED AS SPARES IN THEIR PANELS. PROVIDE NEW TYPEWRITTEN DIRECTORIES FOR ALL PANELS AFFECTED.
4. LOCATIONS OF DEVICES, CONNECTIONS, ETC., INDICATED ON THIS DRAWING WERE TAKEN FROM VARIOUS SOURCES. THEY ARE DIAGRAMMATIC ONLY AND ARE SUBJECT TO VARIATION FROM EXISTING CONDITIONS. CERTAIN EXISTING ELEMENTS MAY NOT BE INDICATED AT ALL. THE CONTRACTOR PROPOSING TO DO ANY PART OF THE WORK INDICATED HEREON SHALL VISIT THIS SITE AND DETERMINE TO HIS SATISFACTION THAT THEY MAY COMPLETE ALL WORK REQUIRED FOR THE BID WHICH HE PROPOSES.
5. REMOVE ALL ASSOCIATED BACKBOXES, CONDUIT AND CONDUCTORS FOR DEVICES / FIXTURES / ETC. BEING REMOVED (BACK TO SOURCE), WHETHER INDICATED OR NOT (UON). CONTRACTOR SHALL PATCH AND REPAIR ANY EXISTING WALLS, FLOORS OR CEILINGS WHERE DEVICES ARE SHOWN TO BE REMOVED (PATCH AND REPAIR TO RECEIVE NEW FINISHES - SEE ARCHITECTURAL PLANS).
6. COORDINATE DISPOSAL OF ALL FIXTURES, DEVICES, ETC. (INDICATED FOR DEMOLITION) WITH OWNER. TURN OVER ITEMS REMOVED TO OWNER AT THEIR OPTION.
7. COORDINATE WITH OTHER TRADES FOR THE REMOVAL AND/OR RELOCATION OF ELECTRICAL DEVICES AND CONNECTIONS ASSOCIATED WITH THEIR EQUIPMENT.
8. PROVIDE TEMPORARY EMERGENCY EXIT LIGHTS AT CONSTRUCTION BARRIERS AS REQUIRED.
9. CONTRACTOR SHALL PATCH AND REPAIR ALL EXISTING WALLS / CEILINGS AS REQUIRED WHERE DEVICES ARE BEING REMOVED OR INSTALLED.
10. UNUSED/ABANDONED CONDUCTORS DISCOVERED ABOVE ACCESSIBLE CEILINGS SHALL BE REMOVED IN ACCORDANCE WITH NEC REQUIREMENTS.
11. EXISTING ELECTRICAL SYSTEMS IN CONFLICT WITH CONSTRUCTION SHALL BE RELOCATED TO PERMIT INSTALLATION OF DEVICES AND EQUIPMENT SHOWN ON PLANS.
12. CONTRACTOR SHALL SEAL ALL EXISTING AND NEW PENETRATIONS OF BUILDING ENVELOPE (EXTERIOR WALLS, ROOF, ETC.) WATER-TIGHT AND AS APPROVED BY ARCHITECT AND ENGINEER. ROOFING SHALL BE RESTORED BY A LICENSED ROOFING CONTRACTOR BASED ON WRITTEN INSTRUCTIONS AND DETAILS FROM ROOFING MANUFACTURER AS REQUIRED TO MAINTAIN ROOF WARRANTY. REFER TO ARCHITECTURAL AND ENGINEERING PLANS AND SPECIFICATIONS FOR FURTHER REQUIREMENTS.
13. ALL EXISTING PANELS AFFECTED BY THIS CONTRACTOR'S WORK SHALL BE PROVIDED WITH NEW TYPE-WRITTEN PANEL DIRECTORIES AND INSERT SLEEVES. PANEL DIRECTORIES SHALL NOT USE ROOM NAMES OR NUMBERS FROM THESE DRAWINGS. DIRECTORIES SHALL BE DETAILED AND COORDINATED WITH OWNER'S SUITE NUMBERS, FINAL ROOM NUMBERS, IT RACK NAMES, WORKSTATION DESIGNATIONS, ETC. UNUSED BREAKERS SHALL BE IN OFF POSITION.

NOT FOR CONSTRUCTION

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PROJECT
OLD EVERETT HIGH SCHOOL - TASK 5
548 Broadway, Everett, MA 02149

CLIENT
CITY OF EVERETT, MA

CONSULANTS

REGISTRATION

Issue Date

KEYPLAN

ISSUE / REVISION

#	Date	Description

PROJECT NUMBER
BEMS26

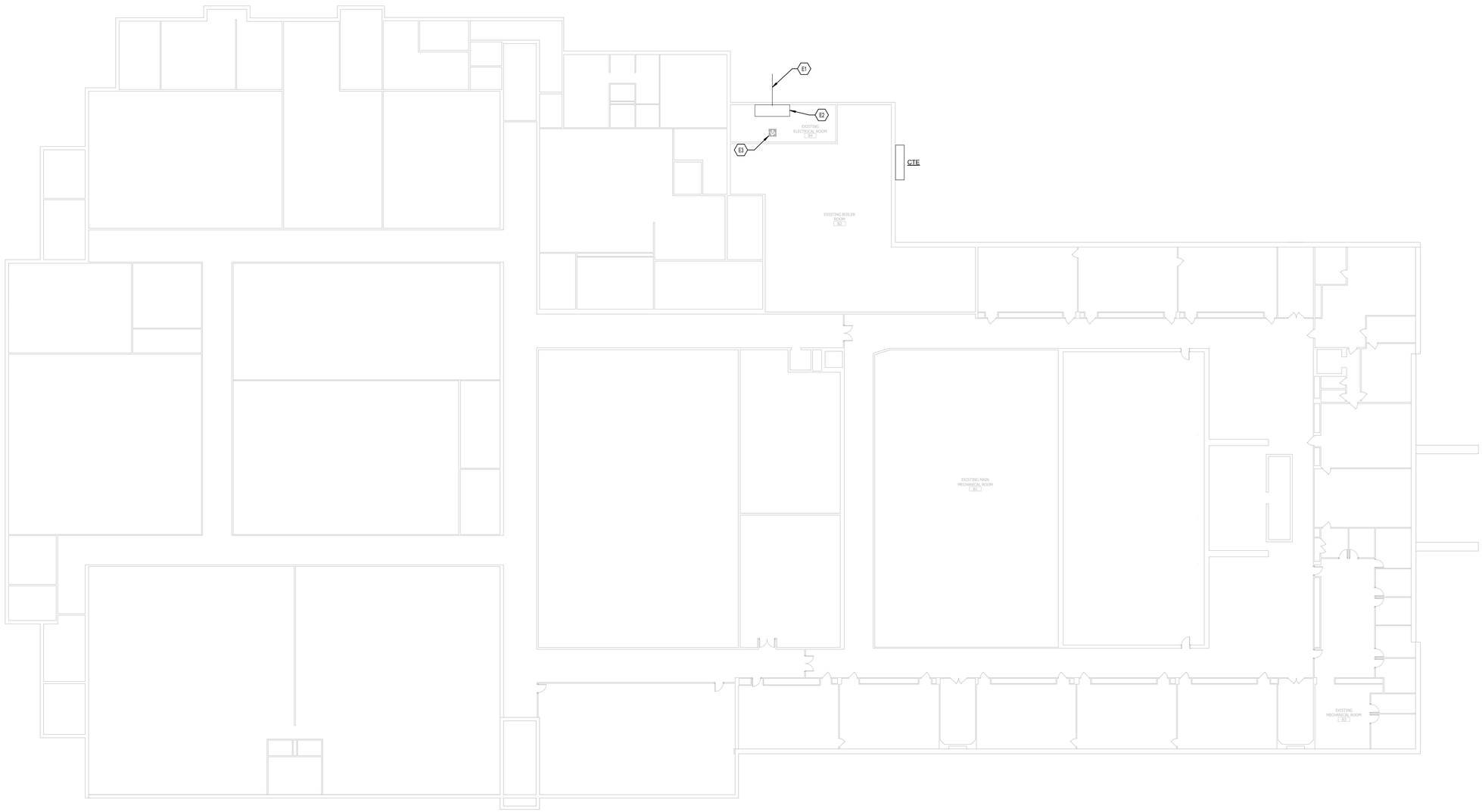
SHEET TITLE
ELECTRICAL SPECIFICATIONS & NOTES

SHEET NUMBER
E-003

FILENAME: Autodesk Docs://Old Everett HS - Task 5 Bandaid/BEMS26_MEP_25.rvt
PLOT TIME: 9/21/2026 3:26:09 PM

TAGGED NOTES

E1	EXISTING SERVICE TO BE MODIFIED.
E2	APPROXIMATE LOCATION OF EXISTING 5,000A SWITCHBOARD.
E3	EXISTING UTILITY METER TO BE REMOVED.



1 ELECTRICAL BASEMENT DEMOLITION PLAN
SCALE: 1/16" = 1'-0"

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OLD EVERETT HIGH SCHOOL - TASK 5

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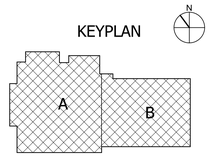


ISSUE / REVISION

#	Date	Description

PROJECT NUMBER

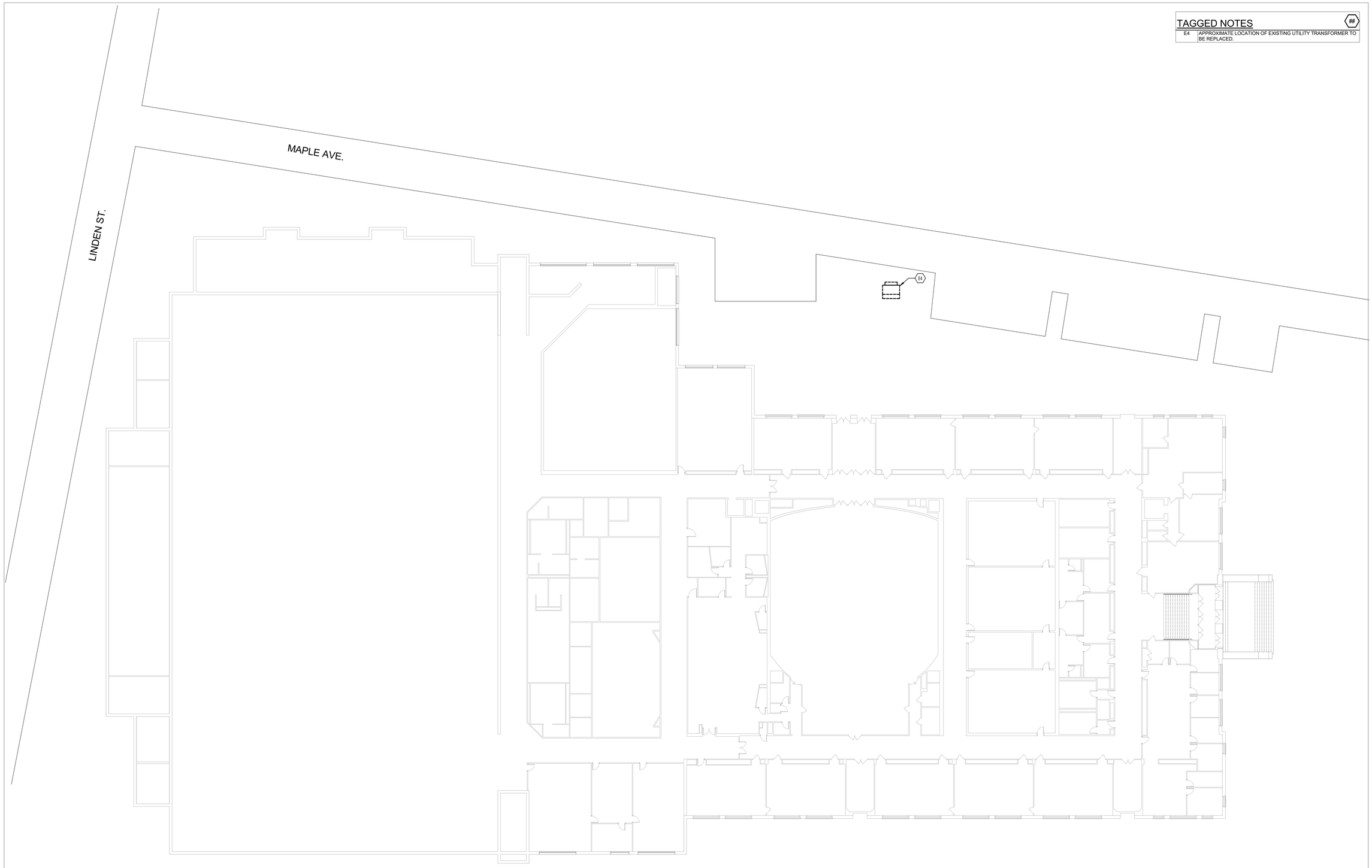
BEMS26

SHEET TITLE

ELECTRICAL BASEMENT DEMOLITION PLAN

SHEET NUMBER

E-100



1 ELECTRICAL FIRST FLOOR DEMOLITION PLAN
SCALE: 1/16" = 1'-0"

TAGGED NOTES

E4	APPROXIMATE LOCATION OF EXISTING UTILITY TRANSFORMER TO BE REPLACED.

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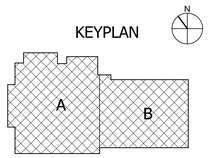
KEYPLAN



ISSUE / REVISION

#	Date	Description

PROJECT NUMBER
BEMS26

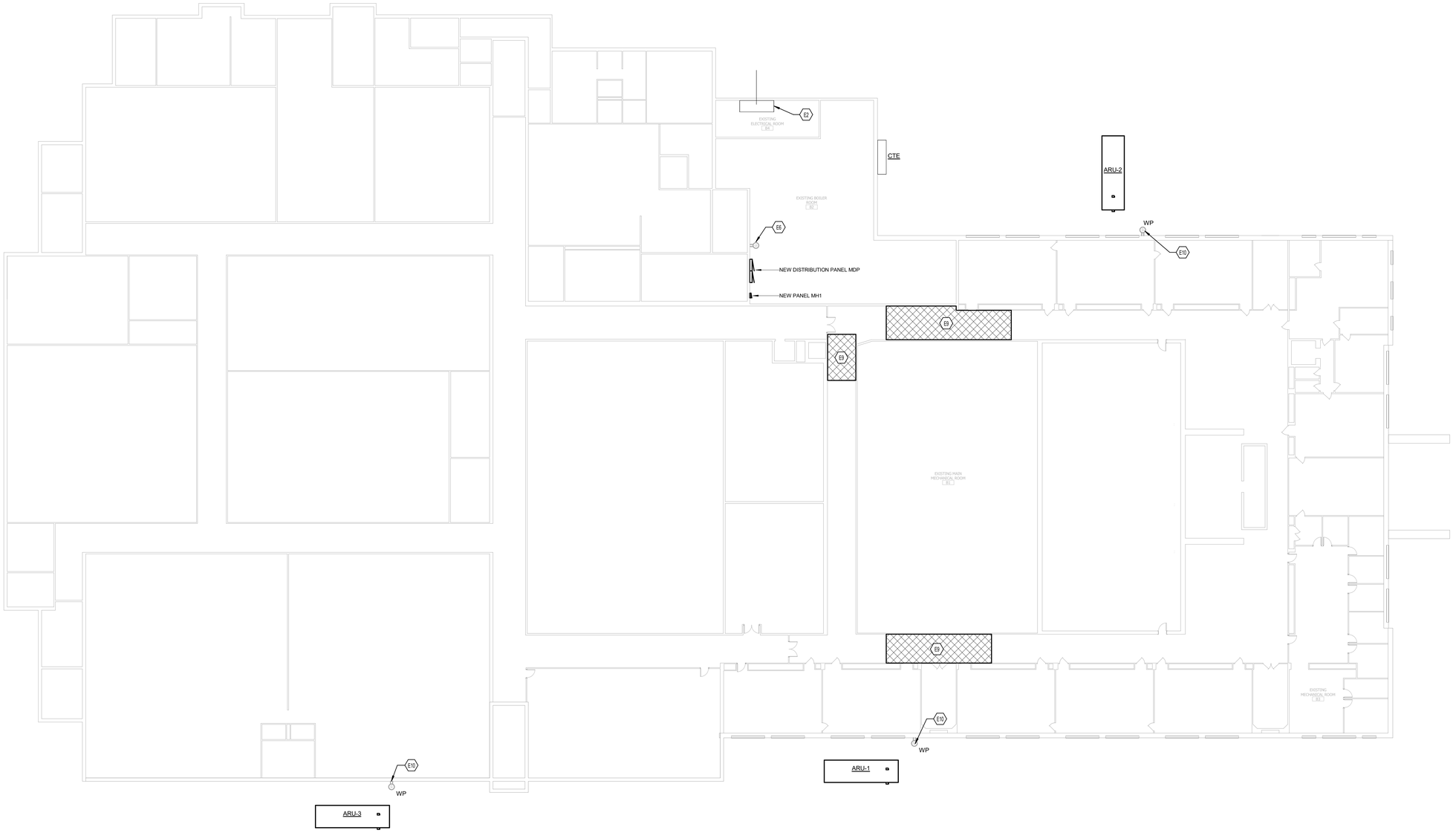
SHEET TITLE
ELECTRICAL FIRST FLOOR DEMOLITION PLAN

SHEET NUMBER
E-101

NOT FOR CONSTRUCTION

TAGGED NOTES

E2	APPROXIMATE LOCATION OF EXISTING 5,000A SWITCHBOARD.
E6	PROVIDE NEW GFCI RECEPTACLE ADJACENT TO MDP. EXTEND 2#12, 1#12G - 1/2"C TO NEAREST 120V PANEL. PROVIDE NEW 20A/1P BREAKER TO MATCH EXISTING, AS NECESSARY.
E9	SHADED AREA REPRESENTS AREA OF STRUCTURE CEILING TO BE REMOVED FOR DUCTWORK. ANY EXISTING CONDUITS IN THIS AREA SHALL BE INTERCEPTED PRIOR TO ENTERING THIS AREA AND RE-ROUTED TO NOT PASS THRU THIS AREA. PROVIDE NEED CONDUCTORS AND JUNCTION BOXES AS NECESSARY FOR ANY RE-ROUTING EFFORTS.
E10	PROVIDE NEW GFCI, WR RATED, RECEPTACLE WITH A WHILE-IN-USE COVER, WITHIN 25'-0" TO MECHANICAL EQUIPMENT. EXTEND 2#10, 1#10G - 3/4"C TO NEAREST 120V PANEL. PROVIDE NEW 20A/1P BREAKER TO MATCH EXISTING, AS NECESSARY.



1 ELECTRICAL BASEMENT POWER PLAN
SCALE: 1/16" = 1'-0"

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PROJECT
OLD EVERETT HIGH SCHOOL - TASK 5
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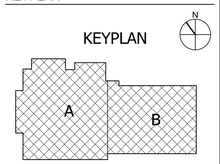
KEYPLAN



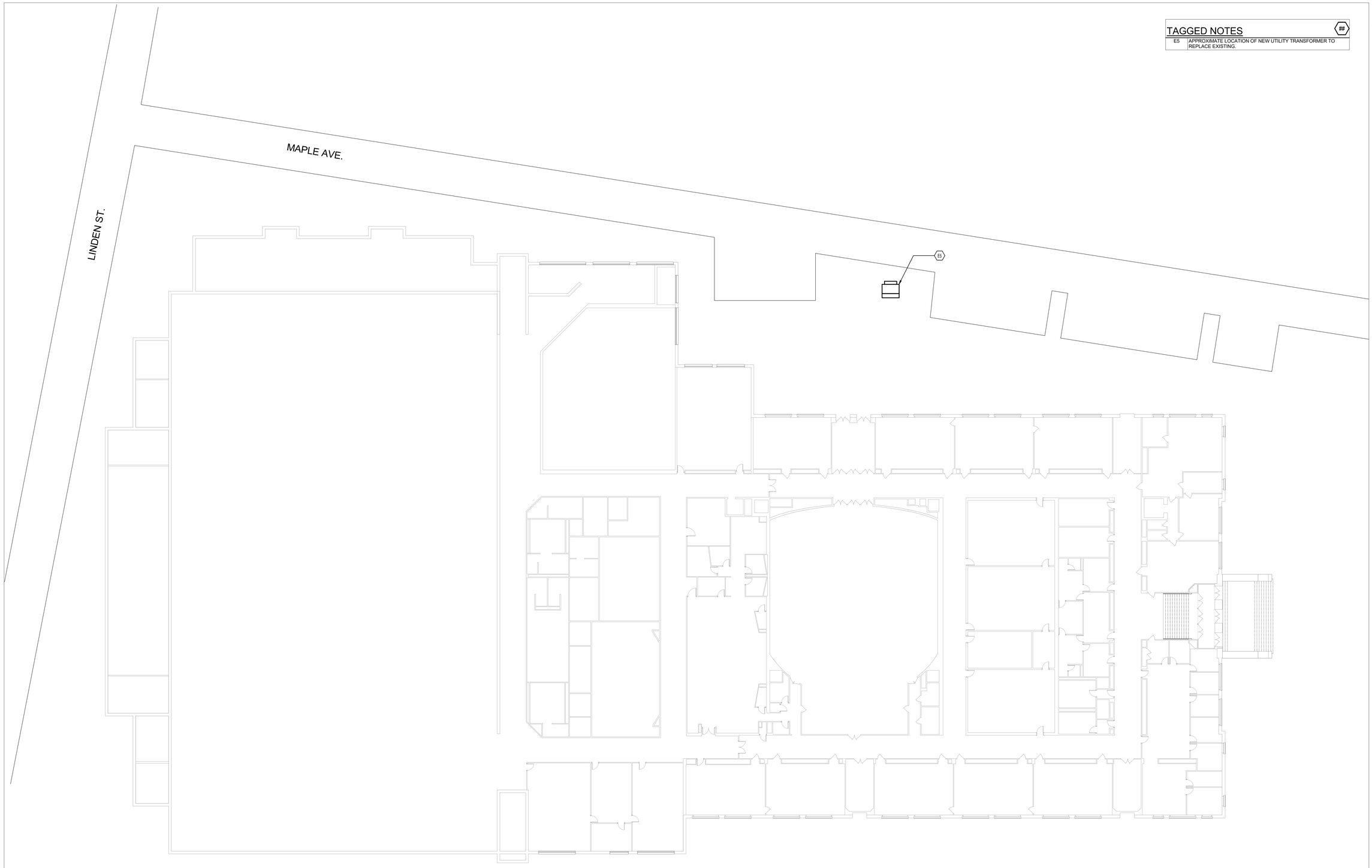
ISSUE / REVISION

#	Date	Description

PROJECT NUMBER
BEMS26

SHEET TITLE
ELECTRICAL BASEMENT POWER PLAN

SHEET NUMBER
E-200



1 ELECTRICAL FIRST FLOOR POWER PLAN
SCALE: 1/16" = 1'-0"

TAGGED NOTES

E5	APPROXIMATE LOCATION OF NEW UTILITY TRANSFORMER TO REPLACE EXISTING.

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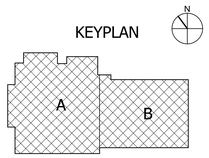


ISSUE / REVISION

#	Date	Description

PROJECT NUMBER
BEMS26

SHEET TITLE
ELECTRICAL FIRST FLOOR POWER PLAN

SHEET NUMBER
E-201

PANELBOARD SCHEDULE

PANEL: MDP — **MAINS TYPE:** 100% RATED MCB — **PANEL INTERRUPTING RATING:** 65 kAIC
VOLTAGE: 480Y/277V,3P,4W — **SPD:** — **LOCATION:** EXISTING BOILER ROOM B2
AMPERES: 1200 A — **MOUNTING:** SURFACE — **SUPPLY FROM:**

NOTES	CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT	NOTES
	1				0.0	0.0					2	
	3	SPARE	100 A	3		0.0	0.0				4	
	5						0.0	0.0			6	
	7				0.0						8	
	9	SPD	100 A	3		0.0					10	
	11						0.0				12	
	13										14	
	15										16	
	17										18	
	19										20	
	21										22	
	23										24	
	25										26	
	27										28	
	29										30	
	31										32	
	33										34	
	35										36	
	37				0.0	119.4					38	
	39	EXISTING SWITCHBOARD	600 A	3		0.0	119.4				40	
	41						0.0	119.4			42	
					119.4 kVA	119.4 kVA	119.4 kVA					
					431 A	431 A	431 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
HEATING	288300 VA	100.00%	288300 VA	TOTAL CONNECTED LOAD:	358104 VA
COOLING	69804 VA	100.00%	69804 VA	TOTAL ESTIMATED DEMAND:	358104 VA
				TOTAL CONNECTED CURRENT:	431 A
				TOTAL ESTIMATED DEMAND CURRENT:	431 A
				25 % ADDITIONAL CAPACITY:	108 A
				TOTAL PANEL CURRENT:	538 A

NOTES: WHERE NOT LISTED, WIRE AND CONDUIT SHALL BE BE MINIMUM PER SPECIFICATIONS. SPARE BREAKERS TO BE 20A/1P.

PANELBOARD SCHEDULE

PANEL: MH1 — **MAINS TYPE:** MLO — **PANEL INTERRUPTING RATING:** 42,000A
VOLTAGE: 480Y/277V,3P,4W — **SPD:** — **LOCATION:** EXISTING BOILER ROOM B2
AMPERES: 600 A — **MOUNTING:** SURFACE — **SUPPLY FROM:** MDP

NOTES	CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT	NOTES
	1				32.0	7.8					2	
	3	ARU-1	125 A	3		32.0	7.8		3	35 A ACCU-1	4	
	5						32.0	7.8			6	
	7				32.0	7.8					8	
	9	ARU-2	125 A	3		32.0	7.8		3	35 A ACCU-2	10	
	11						32.0	7.8			12	
	13				32.0	7.8					14	
	15	ARU-3	125 A	3		32.0	7.8		3	35 A ACCU-3	16	
	17						32.0	7.8			18	
	19										20	
	21										22	
	23										24	
	25										26	
	27										28	
	29										30	
	31										32	
	33										34	
	35										36	
	37										38	
	39										40	
	41										42	
					119.4 kVA	119.4 kVA	119.4 kVA					
					431 A	431 A	431 A					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
HEATING	288300 VA	100.00%	288300 VA	TOTAL CONNECTED LOAD:	358104 VA
COOLING	69804 VA	100.00%	69804 VA	TOTAL ESTIMATED DEMAND:	358104 VA
				TOTAL CONNECTED CURRENT:	431 A
				TOTAL ESTIMATED DEMAND CURRENT:	431 A
				25 % ADDITIONAL CAPACITY:	108 A
				TOTAL PANEL CURRENT:	538 A

NOTES: WHERE NOT LISTED, WIRE AND CONDUIT SHALL BE BE MINIMUM PER SPECIFICATIONS. SPARE BREAKERS TO BE 20A/1P.

ELEC - EQUIPMENT CONNECTION SCHEDULE

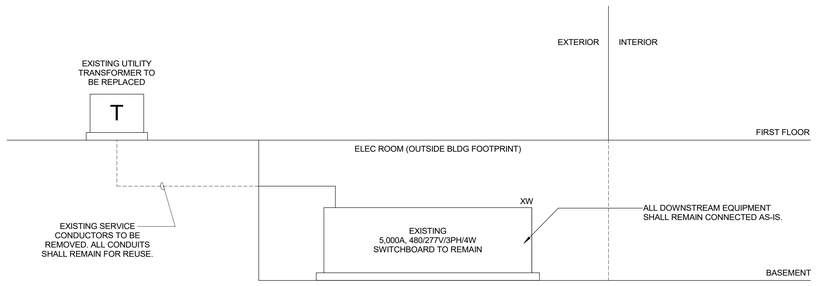
EQUIP ID	DESCRIPTION	HP	VOLTAGE	MCA	kVA	PANEL FED FROM	Circuit Number	E_FEEDER	NEMA RATING	DISCONNECT MEANS	FURNISHED BY	REMARKS
ACCU-1	AIR COOLED CONDENSER		480		23.27 kVA	MH1	2,4,6	3#4,1#6G-1"C		DISC	DIV 23	PROVIDE NEW GFCI RECEPTACLE LOCATED WITHIN 25'-0" OF UNIT. EXTEND 2#10,1#10G-1/2"C TO NEAREST 120V PANEL, AND PROVIDE NEW 20A/1P BREAKER, AS NECESSARY.
ACCU-2	AIR COOLED CONDENSER		480		23.27 kVA	MH1	8,10,12	3#4,1#6G-1"C		DISC	DIV 23	PROVIDE NEW GFCI RECEPTACLE LOCATED WITHIN 25'-0" OF UNIT. EXTEND 2#10,1#10G-1/2"C TO NEAREST 120V PANEL, AND PROVIDE NEW 20A/1P BREAKER, AS NECESSARY.
ACCU-3	AIR COOLED CONDENSER		480		23.27 kVA	MH1	14,16,18	3#4,1#6G-1"C		DISC	DIV 23	PROVIDE NEW GFCI RECEPTACLE LOCATED WITHIN 25'-0" OF UNIT. EXTEND 2#10,1#10G-1/2"C TO NEAREST 120V PANEL, AND PROVIDE NEW 20A/1P BREAKER, AS NECESSARY.
ARU-1	GAS ELECTRIC AIR HANDLING UNIT		480		96.10 kVA	MH1	1,3,5	3#3/0,1#2G-2"C		VFD-DISC	DIV 23	
ARU-2	GAS ELECTRIC AIR HANDLING UNIT		480		96.10 kVA	MH1	7,9,11	3#3/0,1#2G-2"C		VFD-DISC	DIV 23	
ARU-3	GAS ELECTRIC AIR HANDLING UNIT		480		96.10 kVA	MH1	13,15,17	3#3/0,1#2G-2"C		VFD-DISC	DIV 23	

ELECTRICAL ENERGY USE SUBMETERING -

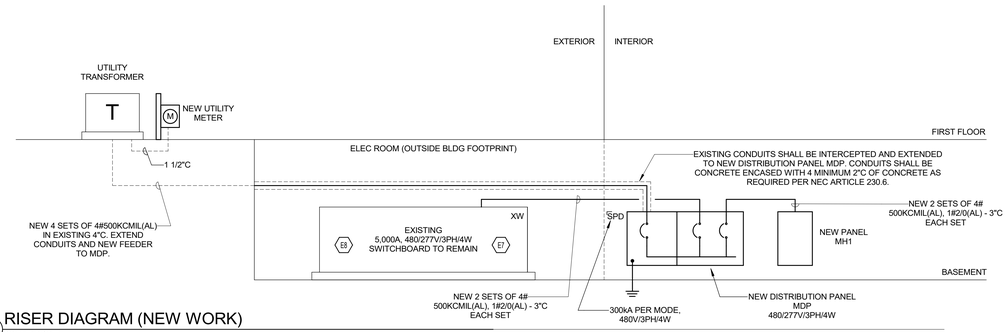
PROVIDE SUBMETERING (BOD: EGAUGE ENERGY METERING SYSTEM) FOR THE BUILDING WITH CTS AT PANELS/SWITCHGEAR DEFINED BELOW. PROVIDE 3-PHASE CT'S AT EACH PANELS/SWITCHGEAR AND TOTAL LOADS PER CATEGORY FOR FINAL READOUTS AND PROVIDE GRAPHS FOR EACH ACCORDINGLY. PROVIDE (1) METER PER NEW PANEL WITH 3-PHASE LOADS BEING (3) POINTS EACH. METERS TO BE LOCATED IN ELECTRICAL CLOSETS. ALL METERS SHALL BE CAPABLE OF RECORDING ELECTRICAL ENERGY USAGE WITH A MINIMUM RECORDING INTERVAL OF 15 MINUTES. THE RECORDED DATA SHALL BE REPORTED HOURLY, DAILY, MOUNTLY, AND ANNUALLY TO THE ENERGY MANAGEMENT SYSTEM (EMS). THE METERING SYSTEM SHALL BE CAPABLE OF MAINTAINING ALL DATA COLLECTED FOR A MINIMUM OF 36 MONTHS. PROVIDE GRAPHS FOR LIGHTING, MECHANICAL, AND KITCHEN LOADS. PROVIDE NETWORK CONNECTION TO THE METERING SYSTEM AS REQUIRED FOR REPORTING.

ELECTRICAL RISER NOTES

1. PROVIDE ENGRAVED LAMACOID LABELS FOR ALL POWER DISTRIBUTION EQUIPMENT FURNISHED OR MODIFIED IN THIS PROJECT, LABELS PER DETAILS AND SPECIFICATIONS.
2. SERVICE EQUIPMENT SHALL BE MARKED WITH THE MAXIMUM AVAILABLE FAULT-CURRENT AT THE EQUIPMENT AND THE DATE THE CALCULATION WAS PERFORMED. APPLY A TYPE-WRITTEN ADHESIVE LABEL WITH WHITE BACKGROUND, 1/2" HIGH BLACK LETTERING.
3. CONTRACTOR SHALL INSTALL SEPARATE CONDUITS, PULL BOXES, ETC. FOR EACH EMERGENCY POWER BRANCH & NORMAL POWER PER NEC FOR COMPLETE SEPARATION OF POWER SERVICES.
4. ALL CIRCUIT BREAKERS AND/OR DISCONNECTS SERVING THE PRIMARY SIDE OF A TRANSFORMER WHICH ARE NOT WITHIN SITE OF THE TRANSFORMER SHALL BE PROVIDED WITH PERMANENTLY INSTALLED MEANS TO LOCK THE BREAKER IN THE OFF POSITION. SUCH TRANSFORMERS SHALL HAVE THE ROOM NAME AND NUMBER OF THE PRIMARY DISCONNECTING MEANS ENGRAVED ON THE EQUIPMENT NAMEPLATE.
5. REFER TO SPECIFICATIONS FOR ARC FLASH AND RELATED POWER SYSTEM STUDY REQURIEMENTS.



1 RISER DIAGRAM (EXISTING)
SCALE: NONE



2 RISER DIAGRAM (NEW WORK)
SCALE: NONE

TAGGED NOTES

E7	EXISTING SERVICE TO SWITCHBOARD. SWITCHBOARD SHALL BE BACK-FED FROM NEW PANEL MDP.
E8	DISCONNECT EXISTING GROUNDING JUMPER BETWEEN GROUND AND NEUTRAL IN EXISTING SERVICE SWITCHBOARD.

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PROJECT

OLD EVERETT HIGH SCHOOL - TASK 5

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#	Date	Description

NOT FOR CONSTRUCTION

PROJECT NUMBER

BEMS26

SHEET TITLE

ELECTRICAL RISER DIAGRAM & SCHEDULES

SHEET NUMBER

E-400

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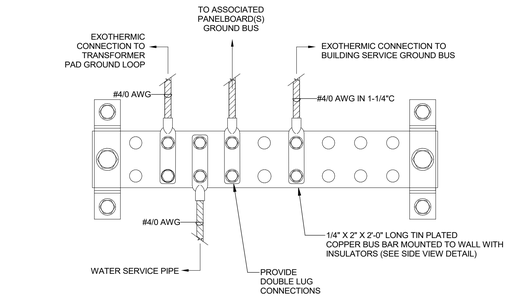
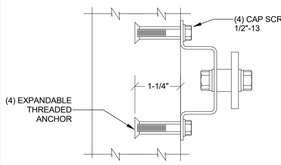


FRONT VIEW



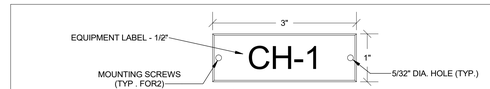
SIDE VIEW

NOTES:

1. BUS BAR ASSEMBLY SHALL BE EQUAL TO ERICO #TGB-A25L14P.
2. BOND PANELBOARD(S) WHICH SERVICES EQUIPMENT WITHIN ROOM.
3. CONDUCTORS ILLUSTRATED REPRESENT MINIMUM SIZES, CONDUCTORS SHALL BE INCREASED AS REQUIRED TO MATCH SOURCE PANELBOARDS' FEEDER GROUNDING CONDUCTOR SIZE.

GE-001 - REV 01/01/16

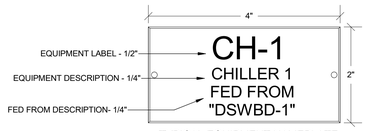
TYPICAL GROUND BUS BAR INSTALLATION DETAIL | NTS



TYPICAL SMALL BREAKER NAMEPLATE

SCALE: N.T.S.

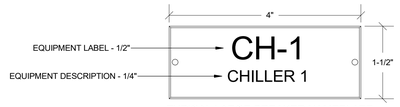
TYPICAL AT CB ON DISTRIBUTION SWITCHBOARDS, PANEL, ETC.



TYPICAL EQUIPMENT NAMEPLATE

SCALE: N.T.S.

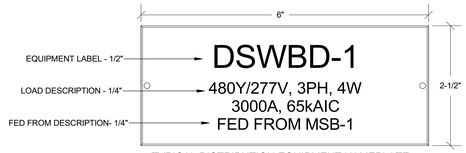
TYPICAL AT EQUIPMENT, VARIABLE SPEED DRIVES, DISCONNECTS, ETC.



TYPICAL LARGE BREAKER NAMEPLATE

SCALE: N.T.S.

TYPICAL AT CB ON DISTRIBUTION SWITCHBOARDS, PANEL, ETC.



TYPICAL DISTRIBUTION EQUIPMENT NAMEPLATE

SCALE: N.T.S.

TYPICAL FOR EACH SECTION OF SWITCHBOARD, DISTRIBUTION PANELBOARDS, PANELBOARDS, ETC.

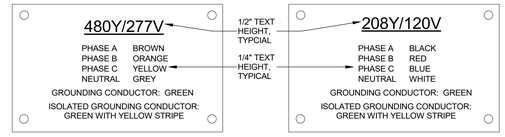
NOTES:

1. REFER TO SPECIFICATIONS FOR ADDITIONAL NAMEPLATE REQUIREMENTS.
2. REFER TO NAMEPLATE COLOR CODE TABLE FOR LETTERING AND FACE COLORS.
3. SECURE NAMEPLATE TO SURFACES WITH (2) FLAT HEAD BRASS SCREWS.

NAMEPLATE COLOR CODES		
USE	BACKGROUND	LETTERING
NORMAL	WHITE	BLACK
LIFE SAFETY	RED	WHITE
STANDBY	WHITE	RED

E-001 - REV 09/26/22

TYPICAL NAMEPLATE DETAIL | NTS

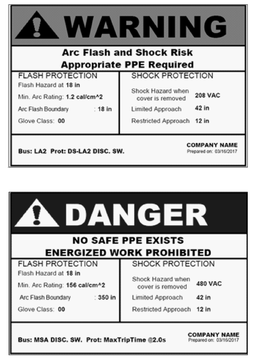


NOTES:

1. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. WITH CONDUCTORS LARGER THAN NO. 6AWG, WRAP TWO FULL TURNS OF 1" WIDE COLORED TAPE AT TWO LOCATIONS (MIN OF 12" APART).
3. SECURE NAMEPLATE TO SURFACES WITH (2) FLAT HEAD BRASS SCREWS.

E-004 - REV 07/10/17

CONDUCTOR COLOR CODING NAMEPLATE | NTS

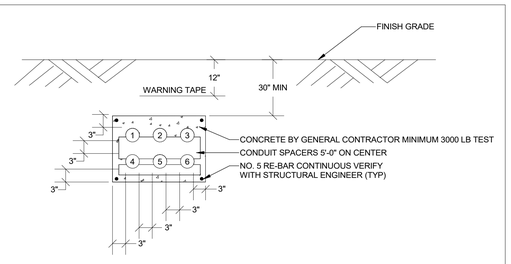


ARC FLASH LABEL NOTES:

1. ARC FLASH WARNING LABELS SHALL BE PROVIDED FOR EACH TRANSFORMER. DISCONNECT SWITCH AND SWITCHBOARD ETC. INCLUDED IN THIS WORK REFER TO SPECIFICATION COORDINATED POWER SYSTEM PROTECTION FOR FURTHER REQUIREMENTS.
2. LABELS SHALL BE 4INCH X 6INCH THERMAL TRANSFER TYPE OF HIGH ADHESIVE POLYESTER FOR EACH WORK LOCATION ANALYZED AND SHALL BE MACHINE PRINTED WITH NO FIELD MARKING. THESE LABELS ARE SHOWN AS EXAMPLE ONLY AND DO NOT REFLECT THE ACTUAL DATA FOR THIS PROJECT.
3. THE LABEL SHALL HAVE AN ORANGE HEADER WITH THE WORDING "WARNING:SHOCK & ARC FLASH HAZARD." OR RED HEADER WITH THE WORDING "DANGER" IF CAL/CM2/ IS>40 .

E-005 - REV 07/20/22

ARC FLASH LABELS | NTS

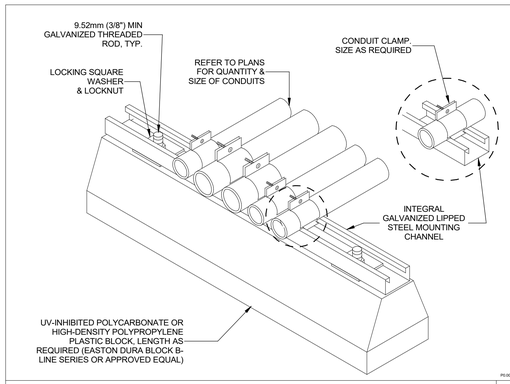


NOTE:

1. STEEL REINFORCING RODS SHALL BE INTERFACED WITH BUILDING FOUNDATION AND MANHOLE WALLS TO MINIMIZE SHEARING

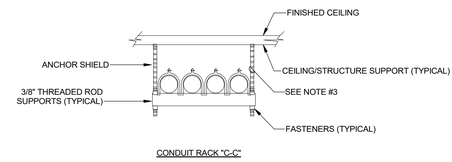
PS-006 - REV 01/01/16

DUCTBANK SECTION "C3" (15kV CAMPUS LINE) DETAIL | NTS



PS-009 - REV 01/01/17

ROOF CONDUIT SUPPORT DETAIL | NTS



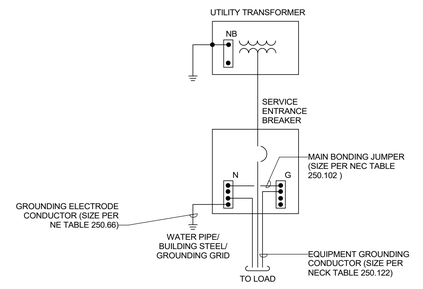
CONDUIT RACK "C-C"

NOTE:

1. E.C. SHALL COORDINATE INSTALLATION AND ROUTING IN FIELD.
2. E.C. SHALL VERIFY EXACT LENGTH OF THREADED ROD IN FIELD WITH BUILDING CONDITIONS.
3. E.C. SHALL PROVIDE CHANNEL HOLE UNISTRUT SIMILAR TO B-LINE TYPE SH WITH ALL NECESSARY NUTS, RODS, SCREWS, CLAMPS, BOLTS ETC. FOR A COMPLETE INSTALLATION.

PS-004 - REV 09/19/2023

CONDUIT RACK DETAIL | NTS



SERVICE ENTRANCE GROUNDING & BONDING DETAIL | NTS

NOT FOR CONSTRUCTION

CMTA
A LEGENCE Company
161 Worcester Road, Suite 305
Framingham, MA 01701
T: 508.647.9200

PROJECT

OLD EVERETT HIGH SCHOOL - TASK 5

548 Broadway, Everett, MA 02149

CLIENT

CITY OF EVERETT, MA

CONSULANTS

REGISTRATION

Issue Date

KEYPLAN

ISSUE / REVISION

#	Date	Description

PROJECT NUMBER

BEMS26

SHEET TITLE

ELECTRICAL DETAILS

SHEET NUMBER

E-500

Autodesk Docs://OLD Everett HS - Task 5 Bim&eng/BEMS26_HEP_E5.rvt
Plotted: 9/11/2024 2:06:47 PM