

# Deerfield Police Station HVAC Improvements

## Town of Deerfield, Massachusetts



### INVITATION FOR BIDS

IFB 2023-2070

Issued March 8, 2023

Bids due March 31, 2023 at 3pm

#### CONTACT INFORMATION:

ANDREA WOODS, MCPPO  
CHIEF PROCUREMENT OFFICER  
FRANKLIN REGIONAL COUNCIL OF GOVERNMENTS

12 Olive Street, Suite 2  
Greenfield, MA 01301

email: [bids@frcog.org](mailto:bids@frcog.org)

bid docs available at <https://frcog.org/bids>

413-774-3167 X104  
FAX: 413-774-3169

#### Engineering Plans and Specifications by:

**HESNOR ENGINEERING ASSOCIATES, PLLC**

2A River Street  
Adams, Massachusetts 01220

IFB 2022-2070 DEERFIELD POLICE STATION HVAC IMPROVEMENTS

**INVITATION FOR BIDS**  
**Deerfield Police Station HVAC Upgrades**  
**IFB 2023-2070**

The Franklin Regional Council of Governments will accept sealed bids on behalf of the Town of Deerfield for HVAC SYSTEM UPGRADES at the Deerfield Police Station located at 8 Conway Street, Deerfield, MA 01373 per the specifications. Hesnor Engineering Associates is the Designer. This project is partly funded by federal ARPA funds.

Sealed bids, plainly marked "**Deerfield Police Station HVAC Upgrades BID**" in the lower left hand corner of the envelope will be accepted by Franklin Regional Council of Governments, 12 Olive St. Suite 2, Greenfield, MA 01301, until **March 31, 2023 at 3PM**, at which time they will be publicly opened and read. **The original and one copy must be submitted. Faxed or emailed bids will not be accepted.**

A bid deposit, payable to The Town of Deerfield, MA, in the amount of 5% of the bid amount is required with the bid submittal and may be in the form of a Treasurer's/bank check or drawn on a MA licensed surety. The awarded contractor will be expected to provide a Performance Bond and a Labor and Materials Payment bond in the amount of 100% of the contract price.

**A pre-bid briefing/walk through will be held at the site on MARCH 17, 2023 AT 10AM. Meet outside the front main door. The walk-through is highly encouraged but not mandatory.**

Wage rates for this bid are subject to prevailing wage rates as per MGL Chapter 149, Section 26 - 27f inclusive and Davis Bacon Federal Wage Rates and are included in the bid package. The higher rate prevails. Bid specifications must be requested from <https://frcog.org/bids> in order to receive addenda and/or meeting notifications. Bidders should check for addenda before submitting their bid.

Qualified bidders who are Minority/Women/Disadvantaged Owned Business Enterprises (M/W/D/BE) are encouraged to apply. Other qualified bidders are encouraged to partner with disadvantaged businesses. The awarded contractor shall endeavor to meet Workforce Participation Goal Requirements under M.G.L. c. 149, § 44A(2)(G) which are currently 6.9% for women and 15.3% for minorities. For more information, see <https://www.mass.gov/administrative-bulletin/equal-opportunity-and-non-discrimination-on-state-and-state-assisted>. A listing of disadvantaged businesses can be found at <https://www.mass.gov/orgs/supplier-diversity-office-sdo>.

The awarding authority is the Town of Deerfield. The Town reserves the right to accept or reject any or all bids in total or in part as they may deem to be in the best public interest.

FRANKLIN REGIONAL COUNCIL OF GOVERNMENTS  
Andrea Woods, Chief Procurement Officer  
March 8, 2023

The Franklin Regional Council of Governments (FRCOG) and the Town do not discriminate on the basis of race, color, national origin, sex, age, disability, or gender with respect to admission to, access to, or operation of its programs, services or activities. If you would like accessibility or language accommodation, please contact the Title VI Coordinator at 413-774-3167 (voice) (MA Relay System: 800-439-2370), 413-774-3169 (fax), or [civilrights@frcog.org](mailto:civilrights@frcog.org) (e-mail).

### **Advertisement for Building Construction Services (MGL c. 149)**

<input type="checkbox"/> Greenfield Recorder Newspaper Legal Ad	3/8/2023
<input type="checkbox"/> Bids posted to FRCOG Webpage <a href="https://frcog.org/bids">https://frcog.org/bids</a>	3/8/2023
<input type="checkbox"/> IFB posted at Deerfield Town Hall	3/8/2023
<input type="checkbox"/> Central Register Publication	3/8/2023
<input type="checkbox"/> Commbuys Publication	3/8/2023

### **CRITICAL DATES**

3/17/2023	<b>Non-Mandatory</b>	On-Site Briefing Meeting 10am
		Location: South Deerfield Police Station, 8 Conway Street

In case of severely inclement weather, planholders will be notified by 5pm on 3/16 and the Briefing Meeting will be held the next business day at the same time.

3/20/2023	Deadline for Written Questions 5pm
	Send questions to <a href="mailto:bids@frcog.org">bids@frcog.org</a> AND <a href="mailto:mtrzcinski@hesnor.com">mtrzcinski@hesnor.com</a>

3/23/2023	Addenda sent to Planholders
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3/31/2023	<b>BID DEADLINE/BID OPENING 3pm</b>
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Bids will be opened and read at Franklin Regional Council of Governments office). Submit 1 original and 1 copy. Original may not be bound but merely clipped to allow them to be scanned.

4/28/2023:	Contract Offered
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<b>90 days from Notice to Proceed</b>	<b>Completion Date</b>
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Liquidated damages are incurred after 90 days

## Bid Package Table of Contents

General Conditions and Engineer's Specifications

Bid Instructions and General Contract Terms

BID FORMS (all to be submitted to FRCOG)

Sample Contract

### EXHIBIT 1

MA Prevailing Wage Reporting and Schedule  
Davis Bacon Wages (Federal)  
Certified Payroll Reporting Forms

### EXHIBIT 2 UNDER SEPARATE COVER

Engineers Plans

## SUMMARY OF THE WORK

Project includes the demolition of two existing air handling units and associated condensers. The new work will include two (2) air handling units equipped with hot water coils, direct-expansion coils, air-cooled condensers and dehumidifiers. Electrical work will generally be limited to selective demolition and power to support the HVAC work.

Project location is the Deerfield MA Police Station located at 8 Conway Street, South Deerfield, MA. Project completion is 90 days from Notice to Proceed. The Town will enforce liquidated damages after 90 days.

## DIVISION 1 SPECIFICATIONS

## PART 1 - GENERAL

### 1.1 GENERAL PROVISIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

### 1.2 DESCRIPTION OF WORK

- A. This Section includes the following:

1. Work covered by the Contract Documents
2. Contract Method
3. Contract Conditions
4. Work under other contracts
5. Work Sequence
6. Owner-furnished products
7. Permits, inspection and testing required by Governing Authorities
8. Specification formats and conventions.
9. Reference standards.
10. Miscellaneous Provisions

- B. Related Sections include the following:

1. Section 011400 - WORK RESTRICTIONS, for contractor's use of premises and other contract requirements during construction.
2. Section 015000 - TEMPORARY FACILITIES AND CONTROLS, for additional information on temporary measures required during construction.
3. Section 017400 - CONSTRUCTION WASTE MANAGEMENT, for removal of non-hazardous debris.
4. Section 017329 - CUTTING AND PATCHING, for requirements for cutting and patching.

### 1.3 WORKS UNDER THIS CONTRACT

- A. Project Identification:

Deerfield Police Department – HVAC Equipment Upgrades

- B. Project Location:

8 Conway Street  
South Deerfield, MA 01373

- C. Owner:

Town of Deerfield  
8 Conway Street  
South Deerfield, MA 01373

- E. Engineer:

Hesnor Engineering Associates, PLLC  
2A River Street  
Adams, MA 01220  
Contact Person: Mike Trzcinski

## F. Description of work:

1. Mechanical Contractor (**MC**): Generally, the **MC**'s Scope of Work includes, but is not limited to:
  - a. All work designated by “**GC**”
  - b. Selective demolition;
  - c. Air handling units;
  - d. Air-cooled condensers;
  - e. Installation of control valves furnished by **TC**;
  - f. Hydronic piping;
  - g. Testing, adjusting and balancing;’
  - h. Coordination and oversight of all Sub-Contractors;
  - i. Keeping the site clean;
  - j. Any other work shown on the drawings and/or described in the specifications as **MC**.
2. Electrical Contractor (**EC**): Generally, the **EC**'s Scope of Work includes, but is not limited to:
  - a. Electrical support of Division 23 work;
  - b. Selective power demolition to make equipment safe for removal by other Contractors;
  - c. Provide all modifications to the existing power distribution system including additional circuit breakers, conduit, conductors and connections for HVAC systems;
  - d. Provide all conductors, conduit boxes and devices;
  - e. Support of temperature control work. Provide all required 120V circuitry necessary for temperature control systems. Note: all required circuitry may not be shown on the drawings – coordinate with the **TC**.
  - f. Testing of systems;
  - g. Coordination with other Contractors;
  - h. Keeping the site clean;
  - i. Any other work shown on the drawings and/or described in the specifications as **EC**.
3. Temperature Control (**TC**): Generally, the **TC**'s Scope of Work includes, but is not limited to:
  - a. Selective demolition of control systems;
  - b. Temperature and equipment control work;
  - c. Sequence of Operations;
  - d. Keeping the site clean;
  - e. Any other work shown on the drawings and/or described in the specifications as **TC**.
4. The Mechanical Contractor shall be considered the General/Prime Contractor. The **EC** and **TC** shall be sub-contractors to the **MC**.

## 1.4 CONTRACT METHOD

- A. Project will be constructed under a single prime contract. This Contract shall be a General Contract for construction, bid as required by Massachusetts General Law Ch. 149A – J.

## 1.5 CONTRACT CONDITIONS

- A. This Contract is subject to applicable State and local laws and all amendments thereto. Where any requirements contained herein do not conform to statutes governing the Work of this Contract, the statutes shall govern.
- B. This Project will be constructed for a political subdivision of the Commonwealth of Massachusetts, and is therefore exempt from State Sales and Use Tax. All bids shall be prepared and purchase of materials for the Project made on the basis of such exemption. After execution of the Contract, the Owner will furnish the Contractor with the exemption number to be used.

- C. The provisions of the Federal Occupational Safety and Health Act (OSHA) apply to the execution of the Work of this Contract, in addition to all other laws, ordinances, rules, regulations, and orders of any Federal, State, or local public authority bearing on the performance of the Work.
- D. Each and every provision of law and clause required by law to be inserted in this Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein, and if, through mistake or otherwise, any such provision is not inserted, or is not correctly inserted, then upon application of either part the Contract shall forthwith be physically amended to make such insertion or correction.

## 1.6 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.
- B. Weather Protection: For requirements, refer to Section 015000 – TEMPORARY FACILITIES AND CONTROLS.

## 1.7 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 to the local building department. Such Permit shall be displayed in a conspicuous location at the project site.
- C. Building permits and other permits required by local authorities are being waived for this project.

## 1.8 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 site during progress of the specific work.

## 1.9 SPECIFICATION FORMATS AND CONVENTIONS

- A. Specification Format: The Specifications are organized into Divisions and Sections using the 50-division format and CSI/CSC's "Master Format 2004 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.
10. Noted: As indicated on drawings and/or specified.
11. Indicated or Shown: As indicated or shown on drawings.
12. Concealed: Embedded in masonry or other construction, installed behind wall furring, within partitions or hung ceilings (permanent or removable), in trenches, or in crawl spaces.
13. Exposed: Not installed underground or concealed.
14. Piping: Pipe, fittings, flanges, valves, controls, hangers, traps, drains, insulation and items necessary or required in connection with or relating thereto.
15. Wiring: Conduits, fittings, wire, junction and outlet boxes, switches, cutouts, and receptacles and items necessary or required in connection with or relating thereto.
16. Control wiring: that wiring which is used for the logic control of systems and is generally 120 volts (AC or DC) or less. Such wiring methods are typically used by temperature control, communications and other automatic system.
17. Power wiring: that wiring which is used for other than logic control of systems and is generally 120 volts single phase and three phase AC. Such wiring methods are typically used for power and lighting system.

## 1.10 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.

## 1.11 PROTECTION OF EQUIPMENT

- A. The CONTRACTORS shall at his own expense protect his work, material and equipment as is liable to injury during the construction period. The CONTRACTORS shall be held responsible for all damages and theft until his work is fully and finally accepted.

## 1.12 OBSTACLES, INTERFERENCES & COORDINATION

- A. The drawings show the general arrangement of mechanical equipment and accessories. Drawings do not indicate all offsets, fittings, accessories and changes in elevation which may be necessary. The CONTRACTORS shall make all changes in equipment, locations, etc., to accommodate the work and to avoid obstacles at no increase in remuneration. The CONTRACTORS shall provide offsets, fittings and accessories as may be required to meet such field conditions.
- B. Equipment shall be installed to avoid interference with the operation, servicing and maintenance of equipment.

## 1.13 INSTALLATION

- A. All work described in these specifications or shown on the drawings and all work required by this Contract shall be executed in a thoroughly substantial and craftsmanlike manner by skilled mechanics in the various trades involved. Follow manufacturer's instructions for installing, connecting and adjusting all equipment.
- B. If products and materials are specified or indicated on the drawings for a specific item or system, those products or materials shall be used. If products and materials are not listed in either of the above, use first class products and materials, subject to approval of shop drawings.
- C. All products shall be new, clean, undamaged, and free of defects and corrosion.
- D. All products shall be shipped and stored in a manner which shall protect them from damage, weather and entry of debris. If items are damaged, they shall not be installed. The CONTRACTORS shall take immediate measures to obtain replacement or repair in order to maintain the schedule.
- E. The CONTRACTORS shall verify that all materials he or his suppliers select conform to the requirements of the drawings and specifications. Transmittal of drawing and specification information to manufacturers supplying materials, and adherence to these requirements is the CONTRACTORS' responsibility. Approval of a manufacturer's name by the Engineer does not release the CONTRACTORS of the responsibility for providing materials which comply in all respects with the requirements in the contract documents.

## 1.14 SUPPORTS

- A. The CONTRACTORS shall furnish and install all necessary clamps, brackets, angles and all other items for the proper support of equipment whether indicated on drawings or not.
- B. All supports necessary for mounting and/or supporting equipment, fixtures, apparatus, etc., shall be of steel or similar material. Wood supports are not acceptable. Where used in corrosive environments, supports shall be suitably protected from corrosion.

## 1.15 ELEVATIONS

- A. The CONTRACTORS shall not be responsible for setting equipment elevations or inverts. The CONTRACTOR who "owns" the equipment shall be responsible to set and check finish elevations or inverts. Prior to a CONTRACTOR using any established bench mark, that CONTRACTOR shall ascertain if that bench mark is in fact true and accurate.
- B. If the MC directs the GC to perform such work, then the MC shall be responsible to check.

## 1.16 ANCHOR BOLTS, SLEEVES, INSERTS AND OPENINGS

- A. The CONTRACTORS shall lay out and install their work in advance of finish construction.
- B. The CONTRACTORS shall furnish all sleeves for passage of conduits through structural masonry and concrete walls, floors, roof and elsewhere as shall be required for the proper protection of each pipe and duct passing through building surfaces.
- C. The CONTRACTORS shall secure all large equipment items with high strength bolts, washers and locknuts. Embedded anchor bolts shall be drilled and set perpendicular to the face of the concrete. Use beveled washers to allow nuts to seat flush on bolts slightly out of perpendicularity. Level all equipment and machinery with wedges, shims and jack bolts and grout under the entire bearing surface.

## 1.17 CUTTING AND REPAIRING

- A. All normal cutting, drilling, chasing and patching required for accommodation of the work shall be accomplished by the respective contractor.
- B. Work shall be carefully laid out in advance and performed in a skilled manner. Any damage to the building piping, equipment shall be repaired by skilled mechanics of the trades involved at no additional cost to the Owner.

## 1.18 EQUIPMENT LAYOUT

- A. Equipment shall be installed to avoid interferences with the operation, servicing and maintenance of equipment.
  - 1. Install all equipment to permit removal (without damage to other elements or parts) of coils, strainers, fan shafts and wheels, filters, belt guards, sheaves and drives, and all other parts requiring periodic replacement or maintenance.
  - 2. Provide access panels in equipment, ducts, etc., as required for inspection of interiors and for proper maintenance.
  - 3. Provide access frames and doors in partitions as required for inspection of installed equipment and for proper maintenance of equipment. Frames and doors are to be of adequate size and match the rating of the construction into which they are built.
  - 4. Arrange equipment to permit access to valves, cocks, traps, starters, motors, pumps, control components and to fully clear the openings of swinging doors and access panels.
  - 5. Placement of equipment shall not in any way interfere with the minimum working space required by code or a component's manufacturer in both the horizontal and vertical planes for safe and proper maintenance.
  - 6. Placement of equipment shall not at any time be below the elevation of a designated finish ceiling.
- C. The CONTRACTORS shall provide the Owner's Representative with all special tools needed for proper operation, adjustment and maintenance of equipment.

## 1.19 PRODUCTS

- A. If products and materials are specified or indicated on the drawings for a specific item or system, those products or materials shall be used. If products and materials are not listed in either of the above, use first class products and materials, subject to approval of shop drawings.
- B. All products shall be new, clean, undamaged, and free of defects and corrosion.
- C. All products shall be shipped and stored in a manner which shall protect them from damage, weather and entry of debris. If items are damaged, they shall not be installed. The Contractor shall take immediate measures to obtain replacement or repair in order to maintain the schedule.
- D. The Contractor shall verify that all materials he or his suppliers select conform to the requirements of the drawings and specifications. Transmittal of drawing and specification information to manufacturers supplying materials, and adherence to these requirements is the Contractor's responsibility. Approval of a manufacturer's name by the Engineer does not release the Contractor of the responsibility for providing materials which comply in all respects with the requirements in the contract documents.

## 1.20 RECONSTRUCTION WORK

- A. The Contractor shall inspect the site and become familiar with the condition of the premises and the scope and character of work required. Additional compensation for adverse field conditions shall not be approved.
- B. The Contractor shall minimize interference with the working routine of occupied areas, by coordinating the performance of his work in a manner acceptable to all groups involved.
- C. The Contractor shall not interrupt any of the building's services in any way without the expressed permission of the Owner. Ample written notice of shutdowns shall be given well in advance to the Owner. Interruptions and interference shall be made as brief as possible and only at times as stated by the Owner. When temporary loss of services is unavoidable, it shall be made at times as shall cause the least interference with the established routine.
- D. The Contractor shall obtain the Owner's Representative's permission before utilizing any room or any other part of the building as a shop.

## 1.21 INSTALLATION

- A. All work described in these specifications or shown on the drawings and all work required by this Contract shall be executed in a thoroughly substantial and craftsmanlike manner by skilled mechanics in the various trades involved. Follow manufacturer's instructions for installing, connecting and adjusting all equipment.

## 1.22 REGULATORY REQUIREMENTS

- A. Comply with all applicable federal and state laws, and all local codes, by-laws and ordinances.
- B. Where provisions of the Contract Documents conflict with any codes, rules or regulations, the latter shall govern. Where the contract requirements are in excess of applicable codes, rules or regulations, the contract provisions shall govern unless the Designer rules otherwise.
- C. Request inspections from authorities having jurisdiction, obtain all permits and pay for all fees and inspection certificates as applicable and/or required. All permits and certificates shall be turned over to the Owner at the completion of the work. Copies of permits shall be given to the Owner prior to the start of work.
- D. Unless otherwise specified or indicated, materials and workmanship and equipment performance shall conform with the latest edition of the following standards, codes, specifications, requirements and regulations:
  - 1. State Building Code
  - 2. State Mechanical, Plumbing, Fire Protection and Electrical Codes
  - 3. National Fire Protection Association (NFPA)
  - 4. Local Town Regulations and By-laws
  - 5. Underwriter's Laboratories, Inc. (UL)
  - 6. National Electrical Manufacturer's Association (NEMA)
  - 7. American National Standards Institute (ANSI)
  - 8. All work shall meet or exceed any other state and local codes and/or authorities having jurisdiction including all other standards indicated herein.

## 1.23 SURVEYS AND MEASUREMENTS

- A. Base all required measurements, both horizontal and vertical, on reference points established by the General Contractor and be responsible for the correct laying out of the electrical work. In the event of a discrepancy between actual measurements and those indicated, notify the General Contractor in writing, and do not proceed with the work required until written instructions have been issued by the General Contractor.
- B. The Contractor is solely responsible for verifying field measurements, conditions, and drawing and specifications information (for all trades) before ordering materials and equipment and before commencing work. The Contractor is solely responsible for verifying shop drawings (including shop drawings of other trades) before releasing related materials and equipment and before rough in. No consideration, claims, charges, or compensation will be granted due to any differences between the actual dimensions and any dimensions indicated on the drawings.
- C. Report any apparent discrepancies or conflicts found at once to the Architect-Engineer for consideration and wait

for a decision before proceeding with any work in the affected area.

- D. The Architect-Engineer's decisions in cases of discrepancies, conflicts, and related to verification of measurements and conditions are final and binding upon the contractor, make all installation accordingly.

## 1.24 EXISTING CONDITIONS AND UTILITIES

- A. Information and data indicated on the drawings regarding existing conditions (including underground utilities) is from the best available sources. However, no assurance is made as to completeness and/or accuracy.
- B. Contact all utility companies operating in the project vicinity (water, gas, sewage, electric, telephone, cable television, etc.) and the owner's maintenance department (where applicable) and verify all existing underground systems before any excavation commences.

## 1.25 ITEMS NOT SHOWN OR SPECIFIED

- A. Provide any items of material not indicated on the drawings and/or not specified, but which are required for the complete and proper installation and/or operation of any part of the work, as if indicated and specified.
- B. Provide any work not indicated on the drawings and/or not specified, but which is required for compliance with applicable codes and regulations, as if indicated and specified.
- C. No consideration, claims, charges, or compensation will be granted for performing work required for complete and proper installation/operation or required for compliance with applicable codes and regulations.

## 1.26 COORDINATION

- A. Drawings are diagrammatic. They indicate general arrangements of systems and other work. They do not show all offsets required for coordination nor do they show the exact routings and locations needed to coordinate with structure and other trades and to meet Architectural requirements.
- B. Work shall be performed in cooperation with other trades on the project and so scheduled as to allow speedy and efficient completion of the work.
- C. Furnish to other trades advance information on locations and sizes of all access doors, electrical frames, electrical boxes, sleeves and openings needed for their work, and also furnish information and shop drawings necessary to permit trades affected by the work to install same properly and without delay.
- D. In all spaces, prior to installation of visible material and equipment, including access panels, review Architectural Drawings for exact locations and where not definitely indicated, request information from Designer. Where the work shall interfere with the work of other trades, assist in working out the space conditions to make satisfactory adjustments before installation. Without extra cost to the Owner, make reasonable modifications to the work as required by normal structural interferences. Pay the General Contractor for additional openings, or relocating and/or enlarging existing openings through concrete floors, walls, beams and roof required for any work which was not properly coordinated. Maintain maximum headroom at all locations. All piping, duct, conduit, and associated components to be as tight to underside of structure as possible.
- E. If any work has been installed before coordination with other trades so as to cause interference with the work of such trades, all necessary adjustments and corrections shall be made by the Contractor(s) involved without extra cost to the Owner.
- F. Where conflicts or potential conflicts exist and engineering guidance is desired, submit sketch of proposed resolution to Designer for review and approval.
- G. Protect all materials and work of other trades from damage which may be caused by the work, and repair all damages without extra cost to the Owner.

## 1.27 ELECTRICAL COORDINATION

- A. MC shall furnish various electrical items relating to the heating and ventilating equipment and control apparatus. The EC shall be required to connect power wiring to this equipment unless noted otherwise.

- B. The MC, TC and EC shall coordinate their respective portions of the work, as well as the electrical characteristics of the heating and ventilating equipment.
- C. All power wiring and local disconnect switches will be provided by the EC for the line voltage power. All control and interlocking wiring shall be the responsibility of the TC.
- D. 120V and above power wiring sources extended and connected to heating and ventilating control panels, transformers and switches shall be the responsibility of the EC. All low voltage thermostat, zone valve and any switch wiring shall be the responsibility of the TC.
- E. Temperature control and equipment wiring shall be installed by the TC.
- F. Except where specifically indicated on the Drawings or in the Specifications, the EC will provide all motor controllers and disconnect switches except those furnished as an integral part of packaged equipment.
- G. The electrical contractor shall be responsible for reviewing submittals (provided by the general contractor) of other trades prior to submitting electrical submittals, ordering or installing any electrical equipment, conduit, wire and materials.
  - 1. **Review:**
    - a. Mechanical equipment submittals.
- H. The electrical contractor must review and incorporate all the electrical loads and characteristics from all the shop drawings submittals of other trades as part of their submittals.
- I. Where conflicts or potential conflicts exist, immediately refer the conflicts to the Architect-Engineer in writing for decision to prevent delay in installation of work.

## 1.28 TYPICAL DETAILS

- A. Typical details where shown on the drawings shall apply to each and every item of the project where such items are applicable. They are not repeated in full on the drawings, which in many cases are diagrammatic only, but with the intention that such details shall be incorporated in full. Any alternate method proposed for use by the Contractor shall have the prior approval of the Designer.

## 1.29 ACCESSIBILITY

- A. Install all work such that parts requiring periodic inspection, operation, maintenance and repair are readily accessible.
- B. Furnish all access panels appropriate to particular conditions, to be installed by trades having responsibility for the construction of actual walls, floors or ceilings at required locations.

## 1.30 SUPPLEMENTARY SUPPORTING STEEL

- A. Provide all supplementary steelwork required for mounting or supporting equipment and materials.
- B. Steelwork shall be firmly connected to building construction.
- C. Steelwork shall be of sufficient strength to allow only minimum deflection in conformity with manufacturer's published requirements.
- D. All supplementary steelwork shall be installed in a neat and workmanlike manner parallel to floor, wall and ceiling construction; all turns shall be made at forty-five and ninety degrees, and/or as dictated by construction and installation conditions.
- E. All manufactured steel parts and fittings shall be galvanized.

## PART 2 - PRODUCTS (NOT USED)

## PART 3 - EXECUTION (NOT USED)

END OF SECTION

## PART 1 - GENERAL

### 1.1 GENERAL REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

### 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 Engineer'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. Storage of materials off-site
  - 15. Dust control.
  - 16. Cleaning during construction.
  - 17. Debris control and removal of rubbish.
  - 18. Pollution control.
  - 19. Owner's occupancy requirements.
  - 20. Project documentation.
- B. Related work includes, but is not limited to, the following work under other Sections:
  - 1. Section 013200 - CONSTRUCTION PROGRESS DOCUMENTATION: Preparation and execution of construction schedule.
  - 2. Section 013100 - PROJECT MANAGEMENT COORDINATION: Procedures and responsibilities for coordinating the Work.
  - 3. Section 013300 - SUBMITTAL PROCEDURES. Submittal procedures.
  - 4. Section 015000 - TEMPORARY FACILITIES AND CONTROLS, for additional information on temporary measures required during construction.
  - 5. Section 017400 - CONSTRUCTION WASTE MANAGEMENT, for removal of non- hazardous debris including provisions for recycling and disposal.
  - 6. Section 017700 - CLOSEOUT PROCEDURES: Procedures for completing the Work.
  - 7. Section 017839 - PROJECT RECORD DOCUMENTS: Preparation of record drawings and other documents.

### 1.3 SUBMITTALS

- A. General: Refer to Section 013300 - 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, at the Pre-construction Meeting, a detailed Logistics Plan, which shall include:

- a. Delivery Hours and Delivery Routes
  - b. Hours of Work
  - c. Trailer Area, and Layout of trailers
  - d. Parking locations for use of Owner and Contractor within the area of work
  - e. Locations for waste management containers.
2. Refer to Section 015000 - 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 Reports
    - b. Proof of submission of Certified weekly payrolls to Owner.

## **1.4 CONTRACTOR RESPONSIBILITY TO THE OWNER FOR ENGINEER'S ADDITIONAL SERVICES**

- A. The Contract between the Owner and the Engineer contains provisions for additional services that may be required of the Engineer 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, 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 Engineer:
  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 013200 - CONSTRUCTION PROGRESS DOCUMENTATION.
  3. Review of re-submitted submittals and Substitution Requests that have been rejected: Refer to Section 013300 - SUBMITTAL PROCEDURES.
  4. Re-inspection of incomplete work: Refer to Section 017700 – CLOSEOUT PROCEDURES.
  5. Design services for the resolution of non-conforming work, including retesting of nonconforming work by Owner's testing agency.

## **1.5 CONSTRUCTION DOCUMENTS**

- A. The General Contractor and each Subcontractor shall retain copies of the Contract Documents issued to them for bidding purposes.
  1. Extra sets returned by bidders and not required for other purposes, as determined by the Owner, will be made available to Contractor and Subcontractors for the Work.
- B. 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. Owner's Project Manager will furnish approximate costs of such additional copies and will transmit originals to local printing companies with whom he regularly does business, but will not receive bills for such printing through his account. All negotiations for such printing shall be between Contractor and Printer.
  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 017839 - 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 011401 - ELECTRONIC RELEASE FORM.

### B. General Procedures: At the Pre-Construction Meeting, the Engineer will present to the Contractor one compact disc (CD) with 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 011401 - ELECTRONIC RELEASE FORM, to be filled out and issued by the Engineer.
  - 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 compact disc with Project Electronic Files will be available from the Engineer at an additional cost.

### C. Electronic File Format:

1. Editable Files: Electronic files for drawings listed on Document 011401 - ELECTRONIC RELEASE FORM will be furnished in “\*.DWG” format.
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 Engineer does not warrant that these electronic documents are compatible with any software or hardware other than those on which they were produced.

### 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 Engineer 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 Engineer, 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 here- in.

- F. Ownership of Documents: By transferring copies of Project Electronic Files, the Engineer 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 Engineer 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 Engineer'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 Engineer 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 Engineer's review.
  - 4. All requests for information from Subcontractors shall be made through the Contractor and addressed to the Engineer, and the Engineer will distribute them as needed to the appropriate Consultants. A copy of each RFI shall be given to the Owner or On-Site Clerk.
  - 5. RFI's shall be issued in a timely manner to permit a thorough review and preparation of a response by the Engineer and their Consultants.
  - 6. The Engineer 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 Engineer 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 Engineer 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 Engineer and Owner.
  2. Distribute copies of each Change Order Request and its attachments to the Owner, Clerk of the Works and Engineer.
  3. The Engineer 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.
- E. Engineer Review of Contractor-Generated Requests for Information and Change Order Requests:
- The Engineer 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 Engineer to review those requests for information.
  2. If the Engineer 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 Engineer 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 Engineer.

## 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 Engineer, 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 Engineer.
- 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 sub- contractor 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 for each phase, 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. Provide photographic survey ahead of construction activities to document existing conditions
- 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 Engineer 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, as required and as indicated on the Drawings, capable of supporting emergency vehicles, and appurtenances. When no longer required, remove temporary construction and restore such areas to their original condition, or as otherwise specified in the Contract Documents. The main construction access road from Fisher Street shall be regraded and left in usable condition at end of the Contract.
- G. Conduct of Construction Personnel: Smoking, foul language, and fraternization with students, staff and faculty is not permitted.

### 3.2 HOURS OF WORK

- A. Hours of work shall generally be from **7:00 AM until 3:30 PM**, excluding Saturdays, Sundays, and holidays, unless otherwise approved by the Owner. Deliveries shall occur within these hours.
- B. The Contractor shall comply with applicable local ordinances.
- C. Phasing Plan: Contractor shall prepare a phased demolition plan which incorporates provisions to commence demolition of ancillary equipment while maintaining heating plant functions as needed.
  - 1. Phasing plan shall take into account removal of hazardous materials, if applicable.
  - 2. Contractor shall provide temporary piping, wiring, connections, etc. where required to maintain existing systems.

### 3.3 CONTRACTOR USE OF PREMISES

- A. General: Contractor shall have full use of premises within established L.O.W. areas 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 Engineer 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 full use of premises for construction operations as indicated on Drawings by the limit of work areas.
  - 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.
- C. 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.
- D. 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.
  - 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.
- E. Contractor shall be responsible for adequate site drainage during the entire construction period and shall use any appropriate temporary means that does not adversely affect construction progress or abutting property.
- F. Contractor shall take all necessary safety precautions and maintain an adequate level of fire protection at all times.
- G. Do not use areas outside the Limit of Work area for temporary storage or structures without specific written permission from the Engineer and Owner.

## 3.4 EXISTING UTILITIES

- A. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by 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 Engineer and Owner at least two (2) 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 and Engineer 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.

## 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 antipollution 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 Engineer 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. 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.
- B. 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.
- C. 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.
- D. 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.

- E. Place a qualified electrician in charge of installing and repairing electric and arc welding equipment.
- F. Notify local Fire Department 24 hours ahead of any steel cutting, open flame work or welding activities in occupied buildings.

### 3.9 STORAGE OF MATERIALS OFF SITE

- A. The Contractor, Subcontractors and Sub-subcontractors shall obtain prior written approval from the Owner through the Engineer 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. Insurance Certificated naming location of storage and Owner as additional insured.
- 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 Clerk of the Works 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 Engineer so that the Owner or Engineer 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 Engineer'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.

### 3.10 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.

## 3.11 CLEANING DURING CONSTRUCTION

### A. Definitions:

1. **Hand Clean**: No evidence of construction debris. All discarded construction waste and packaging materials are removed from the work space and taken to the designated disposal areas (container).
    - a. Does not require Broom Cleaning.
    - b. Does not require Mop Cleaning.
  2. **Broom Clean**: The work space is first Hand Cleaned. The work space is then swept with a hand broom or mechanical broom having fine bristles.
    - a. Does not require Mop Cleaning.
  3. **Mop Clean**: The work space is first Broom Cleaned. The work space is then moped using clean water and mild detergent. The water is to be changed often. At completion no streaks of dust shall be evident.
  4. **Vacuum Clean**: The work space is first Broom Cleaned. The work space is then vacuumed using an Industrial type machine with filters to prevent the Pass-through of dust.
  5. **Wipe Clean**: Equipment shall be cleaned of dust Using clean water and a mild detergent. The water is to be changed often. At the completion, no streaks of dust shall be evident.
- B. Execute cleaning during progress of work and at Substantial Completion, as required by General Conditions and as herein specified.
  - C. 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.
  - D. 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.
  - E. Refer to Sections of the Specifications for cleaning of specific products.
  - F. 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.
  - G. Provide on-site containers for collection of waste materials, debris and rubbish.
  - H. Remove waste materials, debris and rubbish from the site periodically and dispose of at legal areas off site.
  - I. Handle materials in a controlled manner with as few handling as possible. Do not drop or throw materials from heights.
  - J. 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.

## 3.12 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 Engineer, 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 provide snow and ice removal from the contractor access road and the limit of the work area, 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. Contractor shall prevent exhaust from contractor's equipment and vehicles for entering occupied buildings or provide a 24 hour advance notice when such cannot be avoided.
- B. Provide methods, means and facilities required to prevent contamination of soil, water and atmosphere by the discharge of noxious substances from construction operations.
- C. 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.
- D. 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.
- E. Provide systems for control of atmospheric pollutants. Prevent toxic concentrations of chemicals. Prevent harmful dispersal of pollutants into the atmosphere.
- F. Refer to construction phasing plans for information and to the Order of Conditions for sequence of operations for erosion control.

END OF SECTION

## PART 1 - GENERAL

### 1.1 GENERAL PROVISIONS

- 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. The Work of this Section includes requirements for the following procedures:
  - 1. Preparation and submittal of the Preliminary and Final Schedule of Values
- B. Related work includes, but is not limited to, the following work under other Sections:
  - 1. Requirements for construction schedules: Section 013200 - CONSTRUCTION PROGRESS DOCUMENTATION.
  - 2. General procedures for submittals: Section 013300 - SUBMITTAL PROCEDURES.

### 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 SUBMITTALS

- A. Prepare and submit the following submittals in accordance with the requirements of Section 013300 – Submittal Procedures.
- B. Schedule of Values:
  - 1. Schedule of Values shall be typewritten on 8-1/2 by 11 inch white paper.
  - 2. Submit to the Engineer three (3) copies of each Schedule of Values within 7 days of receipt of Notice to Proceed.
- C. List of Subcontractors and Sub-subcontractors: Attached to the Preliminary Schedule of Values shall be a list of the names, addresses (and whether individual, partnership or corporation) of each Subcontractor or Sub-Subcontractor who is to perform all or any part of each subdivision. In the event any Subcontractors, or Sub-subcontractors are not known at the time said schedule is prepared, an amended or supplementary list containing the names of the Subcontractors and Sub-Subcontractors involved and indicating their division of the Work shall be furnished to the Engineer as soon as the information is available. A code number for identification on requisitions shall be used to identify the Contractor, each of the Subcontractors and subordinate Sub- contractors, and shall be shown in each requisition where any part of the Work performed by the Contractor, such Subcontractor, Sub-Subcontractors or material supplier is incorporated in the amount of the requisition for which payment is requested.
- D. Monthly Updates: Submit to the Owner with the Schedule of Values on a monthly basis such schedules of quantities and costs, payrolls, reports, estimates, records, and other data as the Owner may request concerning work performed or to be performed under this Contract. The Schedule of Values shall be submitted at the same time as the updated CPM Schedule showing the current status of the work, as required under Section 013200 - CONSTRUCTION PROGRESS DOCUMENTATION.

### 1.5 SCHEDULE REQUIREMENTS

- A. General: Provide a breakdown of the Contract Sum by individual building and phase and in enough detail to facilitate continued evaluation of Applications for Payment and progress re- ports. Coordinate with the Project CPM Schedule. Provide line items for principal subcontract amounts, where appropriate, and for portions of the work designated in this Section.
- B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the

Schedule of Values. Provide at least one line item for each Specification Section. Identify each line item by Specification Number and Title, and by portion of the Work of that Section where the Work of a Section is allocated to more than one line item.

- C. The Schedule of Values shall be arranged in vertical columns identified with titles, Names of Items; Original Amounts, Percent Completed to Date; Previous Payments; Current Requests; and Balance Not Yet Requested. A summary of the total amount due to date and the amount of the five percent retained shall be included in the statement which shall be signed by the Contractor. A separate sheet shall be included with each requisition showing status of work covered by approved Change Orders. The Schedule of Values shall be revised if later found by the Engineer to be inaccurate.
- D. In preparing the Schedule, each sub-division or classification of the Work shall be identified by code number referring to each individual Section (or Sub-Section where applicable) of the Specifications. The Schedule of Values shall be prepared in accordance with AIA Documents G702 and G703.
- E. Initial values will be recognized to be an accurate accounting of the value of the work. Upon request by the Engineer, support values given with data that will substantiate their correctness.
- F. Identify quantities of designated materials or materials stored on which payment is expected to be made.
- G. Use monthly submissions of Schedule of Values only as basis for Contractor's Application for Payment.

## 1.6 PREPARING SCHEDULE OF VALUES

- A. General Procedures:
  - 1. Prepare Preliminary Schedule of Values for review by Engineer and Owner
  - 2. Incorporate requested modifications to produce a Final Schedule of Values, which will become the basis for documenting the progress of the Work with each Application for Payment.
  - 3. Update Final Schedule of Values as necessary to reflect changes in the Work.
- B. Itemize separate line item cost for each of the general cost items as specified in this Section.
- C. Breakdown installed costs into:
  - 1. Delivered cost of product
  - 2. Total installation cost, with overhead and profit.
  - 3. Construction phase.
  - 4. Note that the Owner is exempt from Sales and Use Tax for all materials incorporated into the Work.
- D. For each line item which has installed value of more than \$20,000.00 breakdown costs to list major products, components, or operations under each line.
- E. Sum of costs of all items listed in schedule shall be equal to total Contract Sum.
- F. Each item shown on an Application for Payment Schedule of Values shall also appear on the CPM Schedule.

## 1.7 LINE ITEMS FOR SCHEDULE OF VALUES

- A. Work Covered in Division 1: Itemize separate line item cost for each of the following general cost items:
  - 1. Builder's Risk Insurance
  - 2. Performance and Payment Bonds for General Contractor and Filed Subcontractors.
  - 3. Field engineering; photographic documentation.
  - 4. Coordination; project management.
  - 5. Preparation of schedule and periodic updates.

- a. If periodic updates of schedule are not performed in a timely manner, the amount shown on the Schedule of Values for this line item shall be forfeit.
6. Weather protection; temporary fence.
7. Temporary heat, water, power and lighting.
8. Temporary office facilities; temporary sanitary facilities.
9. Construction aids, including staging, scaffolding, shoring.
10. Project sign.
11. Indoor air quality provisions.
12. Construction waste management.
13. Cutting and patching; selective demolition
14. Final cleaning.
15. Punchlist preparation and response.
16. Maintenance of as-built documents for Engineering and site work; preparation of closeout documents.
17. Commissioning activities.
18. Overhead.
19. Other items of work as requested by the Engineer or Owner.
- B. Work Covered in Divisions 2 through 50: Provide at least one separate line item for each Section of the Specifications. Section line items shall be further subdivided into separate line items as follows:
  1. Subdivide each line item into separate line items for individual floors of the project where applicable.
  2. Identify material costs separately from labor costs.
  3. Provide separate line items for the following where applicable:
    - a. Submittals, including but not limited to Material Credits Documentation Sheet (MCDS) and all supporting documentation refer to Section 018113.
    - b. Maintenance of as-built documents for mechanical and electrical work
    - c. Preparation of closeout documents
    - d. Operations and Maintenance Manuals;
    - e. Training
    - f. Other items of work as requested by the Engineer or Owner.
  4. For mechanical and electrical work, provide the following additional separate line items where applicable:
    - a. Commissioning activities other than demonstration of FPT to the Commissioning Firm
    - b. Commissioning activities associated with demonstration of FPT to the Commissioning Firm
  5. For each line item which has installed value of more than \$20,000.00 break down costs to list major products, components, or operations under each line.

## **PART 2 - PRODUCTS [NOT USED]**

## **PART 3 - EXECUTION [NOT USED]**

END OF SECTION

## PART 1 - GENERAL

### 1.1 GENERAL PROVISIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

### 1.2 DESCRIPTION OF WORK

- A. The Work of this Section includes, but is not limited to, requirements for the following procedures:
  - 1. Project Documentation and web-based communication.
  - 2. Responsibility for coordination of the Work.
- B. Related work includes, but is not limited to, the following work under other Sections:
  - 1. General requirements for submittals: Section 013300 - SUBMITTAL PROCEDURES.

### 1.3 SUBMITTALS

- A. Prepare and submit documentation in accordance with Section 013300 – SUBMITTAL PROCEDURES.
- B. Drawings:
  - 1. Coordination Drawings as described in this Section.

### 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. Full-time Superintendent: A superintendent licensed in the Commonwealth of Massachusetts, with the authority to act on behalf of the Contractor. The Superintendent shall supervise the Work at all times throughout the duration of the Project.
  - 2. 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.
  - 3. The Contractor shall also provide an adequate staff for the proper coordination and expediting of the Work.
- C. 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.
- D. 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.

- E. The Contractor shall be fully responsible for coordination of general construction work with that of Subcontractors for MASONRY, 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.
- F. 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.
- G. The Contractor shall be responsible for ensuring required distances, of air intakes from noxious contaminants as required by mechanical and plumbing codes.
- 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 Engineer.
- 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.

## **PART 2 - PRODUCTS [NOT USED]**

## **PART 3 - EXECUTION [NOT USED]**

END OF SECTION

## PART 1 - GENERAL

### 1.1 GENERAL PROVISIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

### 1.2 DESCRIPTION OF WORK

- A. The Work of this Section includes, but is not limited to, requirements for the following procedures:
  - 1. Organizational meetings.
  - 2. Project meetings.
  - 3. Pre-Installation conferences
  - 4. Post-construction meetings

## PART 2 - PRODUCTS

### 2.1 ORGANIZATIONAL MEETINGS

- A. General: The Owner's will schedule pre-construction organizational meetings, periodic project meetings, specially called meetings throughout the progress of the Work, and post-construction meetings. Representatives of the Contractor shall attend all such meeting. Subcontractors shall attend only if requested by the Engineer or the Owner.
- B. Pre-Construction Meeting: Immediately following award of Contract, the Engineer will call one or more preliminary organizational meetings, during which detailed procedures will be worked out for submission and review of Shop Drawings and samples, format and extent of the Progress Schedule and Schedule of Values, format and methods for progress payment requisitions, channels of communication between Owner, Engineer's and Contractor's personnel, and other routines to be followed during construction. The Engineer will then issue a directive summarizing such procedures.

### 2.2 PROJECT MEETINGS

- A. The Engineer shall schedule and meet regularly with the Owner and the Contractor at the site of the Work during the course of the Contract for the purpose of progress review, coordination of Shop Drawing schedules, sample submittals, and other items of work requiring such coordination. The dates of such meetings shall be as mutually agreed upon between the Owner, Contractor and the Engineer. Contractor shall require Subcontractors to attend such meetings if requested by the Engineer.
- B. The Engineer will take minutes of such meetings and will distribute copies of the minutes to all concerned.
- C. Contractor's and Subcontractor's representatives attending such meetings shall include the job superintendent or other responsible party approved by the Engineer. Such representatives shall be empowered to make, at these meetings, definite decisions binding upon their respective employers regarding all matters pertaining to work under this Contract.
- D. The Contractor shall furnish the Owner and the Engineer, in writing, the names, addresses, and telephone numbers of Contractor's and principal Subcontractors' personnel to be contacted in the event of an out of hours emergency at the building site. He shall also maintain a similar list readily visible from the outside of the field office.

### 2.3 PRE-INSTALLATION CONFERENCES

- A. Pre-Installation Conferences: Conduct pre-installation conferences at site prior to construction activities that require coordination.
  - 1. Schedule the conference to occur after submittals have been approved for the materials or systems.

2. Installers, manufacturer's representatives, and fabricators of materials or systems affected shall be required to attend. Advise Designer of scheduled meeting dates.
3. Do not allow affected work to proceed if the conference cannot be successfully concluded. Initiate actions necessary to resolve impediments to performance of the work and reconvene the conference at the earliest feasible date.

B. Refer to individual specifications sections for additional requirements.

## 2.4 POST-CONSTRUCTION MEETINGS

- A. Not less often than every three months, starting with the date of Substantial Completion and continuing for one year thereafter, representatives of the Contractor and the Subcontractors for FIRE PROTECTION, PLUMBING, HVAC, and ELECTRICAL Work shall meet with the Engineer and Owner at the site in accordance with an agreed-upon schedule in order to inspect the Work and to plan correction of any deficiencies or failures discovered during this period.
- B. Representatives of the Contractor and Subcontractors attending such meetings shall be the same persons, or shall have the same powers and authority, as those attending job meetings prior to the date of Substantial Completion.

END OF SECTION



## PART 1 – GENERAL

### 1.1 GENERAL PROVISIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

### 1.2 DESCRIPTION OF WORK

- A. The Work of this Section includes, but is not limited to, requirements for the following procedures:
  - 1. Quality assurance
  - 2. Quality control
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
  - 1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
  - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality- assurance and - control procedures that facilitate compliance with the Contract Document requirements.
  - 3. Requirements for Contractor to provide quality assurance and control services required by Engineer, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

### 1.3 DEFINITIONS

- A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Engineer.
- C. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish the standard by which the Work will be judged.
- D. Laboratory Mockups: Full-size, physical assemblies that are constructed at testing facility to verify performance characteristics.
- E. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.
- F. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.
- G. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.
- H. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- I. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

- J. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
  - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to trades people of the corresponding generic name.
- K. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

## 1.4 CONFLICTING REQUIREMENTS

- A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Engineer for a decision before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Engineer for a decision before proceeding.

## 1.5 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or products that are similar to those indicated for this Project in material, design, and extent.
- F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
  - 1. Requirement for specialists shall not supersede building codes and regulations governing the Work.
- G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
- H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

- I. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
  - 1. Contractor responsibilities include the following:
    - a. Provide test specimens representative of proposed products and construction.
    - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
    - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
    - d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
    - e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
    - f. When testing is complete, remove test specimens, assemblies, mockups, and laboratory mockups; do not reuse products on Project.
  - 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Engineer, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
- J. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
  - 1. Build mockups in location and of size indicated or, if not indicated, as directed by Engineer.
  - 2. Coordinate the work of multiple subcontractors as needed to build complete mockups of multicomponent systems.
  - 3. Notify Engineer seven days in advance of dates and times when mockups will be constructed.
  - 4. Demonstrate the proposed range of aesthetic effects and workmanship.
  - 5. Obtain Engineer's approval of mockups before starting work, fabrication, or construction.
    - a. Allow seven days for initial review and each re-review of each mockup.
  - 6. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
  - 7. Demolish and remove mockups when directed, unless otherwise indicated.
- K. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Sections in Divisions 02 through 50.

## 1.7 QUALITY CONTROL – OWNER RESPONSIBILITIES

- A. General: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
  - 1. Testing, inspections and commissioning performed by the Owner or the Owner's agents in no way reduce the responsibility of the Contractor to meet performance requirements, descriptive criteria and all other requirements of the specifications, nor do these activities on the part of the Owner relieve the Contractor from performing Quality Assurance and Quality Control measures specified.
- B. Tests and Inspections: The Owner reserves the right to employ consultants and testing agencies to test the performance of the Work and to inspect the Work for conformance with the Contract Documents.
  - 1. Notice for Testing: The Contractor shall give the Owner a minimum 24-hour notice when installations that require testing are ready for testing or inspection.
    - a. Earlier notice shall be given where specified in a given technical section of the Specifications.

- b. If the Owner's testing agency arrives at the site to test the performance of the work, and determines that the installation is not ready for testing or inspections, then the Contractor shall be responsible for the costs of the testing agency's site visit
- 2. Availability of Test Results: The results of such tests and inspections will be made available to the Engineer and Contractor.
- 3. Correction of Work:
  - a. Where results demonstrate deficiencies in the Work, the Contractor shall take all actions necessary to correct the Work in a timely manner at their own expense.
  - b. When the Contractor considers the Work to be corrected, further tests and inspections will be performed by the Owner's consultants and testing agencies at the Contractor's expense.
- C. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
- D. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.

## 1.8 QUALITY CONTROL – CONTRACTOR RESPONSIBILITIES

- A. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
  - 1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
    - a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
  - 2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
  - 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
  - 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
  - 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- B. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 1 Section "Submittal Procedures."
- C. Retesting/Re-inspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and re-inspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- D. Testing Agency Responsibilities: Cooperate with Engineer and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
  - 1. Notify Engineer and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
  - 2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.

3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
  4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality- control service through Contractor.
  5. Does not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
  6. Do not perform any duties of Contractor.
- E. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
  2. Incidental labor and facilities necessary to facilitate tests and inspections.
  3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
  4. Facilities for storage and field curing of test samples.
  5. Delivery of samples to testing agencies.
  6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  7. Security and protection for samples and for testing and inspecting equipment at Project site.
- F. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and –control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting. Schedule times for tests, inspections, obtaining samples, and similar activities.
- G. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality- control services required by the Contract Documents. Submit schedule within 30 days of date established for the Notice to Proceed.
1. Distribution: Distribute schedule to Owner, Engineer, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

## **PART 2 - PRODUCTS (NOT USED)**

## **PART 3 - EXECUTION**

### **3.1 REPAIR AND PROTECTION**

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
  2. Comply with the Contract Document requirements for Section 017329 - CUTTING AND PATCHING.
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION

## PART 1 - GENERAL

### 1.1 GENERAL PROVISIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

### 1.2 DESCRIPTION OF WORK

- A. The Work of this Section includes, but is not limited to, requirements for the following procedures:
  - 1. Temporary electricity, lighting, telephone service, water, and sanitary facilities.
  - 2. Safety and Protection
  - 3. Temporary Heat
  - 4. Protection of the Work
  - 5. Security
  - 6. Construction facilities: progress cleaning, project signage, and temporary offices
  - 7. Staging and Scaffolding
  - 8. Noise, dust, and pollution control
- B. Related work includes, but is not limited to, the following work under other Sections:
  - 1. Section 01 70 00 - CLOSEOUT PROCEDURES

### 1.3 TEMPORARY FACILITIES AND SERVICES

- A. Not Required.

### 1.4 TEMPORARY ELECTRICITY

- A. General Contractor may utilize Town power. The Electrical Subcontractor is required to provide temporary feeders of sufficient capacity to provide for the electrical light and power requirements of the project.
- B. Take care not to overload equipment and lines.
- C. Electrical Subcontractor to provide power outlets for construction operations, with branch wiring and distribution boxes.
- D. Use of electrical power may be discontinued by the Town if, in the opinion of the Project Engineer, it is wastefully used. Then the Town will direct the General Contractor to pay for the furnishing and installing, by the Electrical Subcontractor, of a watt-hour demand meter and associated current transformers. The General Contractor will then pay for energy consumed for the remainder of the construction period.

### 1.5 TELEPHONE SERVICE

- A. Provide telephone service at the time of project mobilization, for use by the Contractor's authorized agents, and subcontractors. Such service may be by cellular phone, if adequate connectivity can be maintained.

### 1.6 SANITARY FACILITIES

- A. Contractor shall provide an adequate number of toilet facilities with chemical type toilets and temporary lighting rented from and serviced by an approved company, as necessary for all persons engaged on the Work. Provide separate facilities for male and female workers.
- B. Permanent toilet facilities shall not be used by the Contractor, Subcontractors or any persons engaged by them during the course of work under this Contract.

## 1.9 SAFETY AND PROTECTION

- A. Comply with applicable safety regulations, including ANSI Series A10, Safety Requirements for Construction and Demolition, and OSHA Part 1926, Construction Safety and Health Regulations. Provide barricades, fences, and other protection measures as required.
- B. Provide barriers to prevent unauthorized entry to construction areas to allow for Owner's use of site, and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- C. Protect non-owned vehicular traffic, stored materials, site and structures from damage.
- D. Storage of flammable materials shall not be allowed on the premises.
- E. Construct barricades and protective facilities in accordance with local and State regulations. Furnish and install all signs, lights, reflectors, and all such protection facilities as may be required.
- F. Contractor shall save the Owner harmless from all claims arising from the use of public streets, sidewalks, and adjoining premises for construction purposes.
- G. The Contractor shall be responsible for the maintenance of construction barriers and traffic barriers in order to maintain traffic around the Work with the maximum of safety and practical convenience to such traffic during the life of the Contract, and whether or not work has been suspended temporarily. He shall take all precautions for preventing injuries to persons or damage to property on or about the Work.
- H. Work shall be carried on and barriers erected in such a manner as to provide safe passage at all times for public travel and with least obstruction to traffic. The Contractor shall provide and maintain at his own expense in a safe and passable condition such temporary bypasses created by the barriers as may be necessary to accommodate both pedestrian and vehicular traffic.
- I. Whenever gale or high winds are forecast, take proper measurements to secure all loose material, equipment or other items that could blow about and be damaged or cause damage to other work. No such loose items shall be left unsecured at end of working day. Particular attention shall be taken with scaffolding and items placed or stored on roofs or within the structure prior to being enclosed.

## 1.7 WATER CONTROL

- A. Grade excavations to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- B. Protect construction area from puddling or running water. Provide water barriers as required to protect site from soil erosion.
- C. Protect non-owned vehicular traffic, stored materials, site and structures from damage.

## 1.8 PROTECTION OF INSTALLED WORK

- A. Protect installed Work and provide special protection where specified in individual specification Sections.
- B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to minimize damage.
- C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- D. Protect finished pavement, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- E. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

## 1.9 SECURITY

- A. Provide security and facilities to protect Work and existing facilities, from unauthorized entry, vandalism, and theft.
- B. Coordinate with Owner's security program.

## 1.10 PROGRESS CLEANING AND TEMPORARY TRASH CONTAINERS

- A. Maintain work areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. The General contractor shall provide temporary dumpster type trash containers outside the building for use by all filed sub-bid (except those listed below) and non filed sub-bid 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 and waste created by their operations, on a daily basis.
- D. Excluded from these temporary trash containers shall be all removed materials resulting from site work, including all excavated site materials, whether the work of these categories is by the General Contractor, Filed Sub-Bid Subcontractors, or Non-filed Sub-Bid Subcontractors.
- E. 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 the wall openings, and in no case shall be permitted to drop freely there from.
- E. All waste materials and rubbish shall be disposed of legally, off the site.

## 1.11 STAGGING AND SCAFFOLDING

- A. Each Subcontractor shall provide their own staging and scaffolding. Staging and scaffolding shall be of approved design, erected and removed by experienced stage builders and shall have all accident prevention devices required by State and Local Laws.
- B. On completion of their work, each subcontractor shall dismantle and remove such staging and scaffolding.
- C. All other references to Scaffolding in the Specification shall conform to this provision.

## 1.12 NOISE, DUST AND POLLUTION CONTROL

- A. Dust control measures shall be adhered to during the entire construction process. The preferred method of Dust Control shall be with calcium chloride application, as appropriate or as required by the engineer. Other methods shall be approved by the Engineer.
- B. All work performed under the Contract shall conform to the requirements of Chapter III, Section 31C and Section 142D of the General Laws, Commonwealth of Massachusetts and Rules and Regulations adopted thereto by the Commonwealth of Massachusetts, Dept. of Public Health, and the requirements of local noise, dust and pollution control laws, ordinances, and regulative agencies applicable to the work.
- C. The Contractor shall endeavor at all times to maintain as low a level of construction noise as practicable in order not to create a disturbance.
- D. Any complaints duly registered by the owner of unacceptable noise levels shall be cause for the use of special precautions and methods of operation by the Contractor to reduce noise to acceptable levels, at no additional cost to the Owner.
- E. The Owner shall be the sole judge of tolerable noise levels.

## PART 2 - PRODUCTS (NOT USED)

## PART 3- EXECUTION (NOT USED)

END OF SECTION



## PART 1 - GENERAL

### 1.1 GENERAL PROVISIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

### 1.2 DESCRIPTION OF WORK

- A. This Section covers procedural requirements for cutting and patching, including but not limited to the following:
  - 1. Standard requirements for all cutting and patching to be done on the Project, whether by the General Contractor, Filed Sub-Contractors or other subcontractors.
- B. Refer to the following Sections for related work:
  - 1. Section 015000 - TEMPORARY FACILITIES AND CONTROLS, for temporary protection, shoring and construction aids.
  - 2. Section 017400 - CONSTRUCTION WASTE MANAGEMENT, for disposal of demolished materials.
  - 3. Division 02 through Division 50 Sections, for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
  - 4. Division 22 – PLUMBING, 23 - MECHANICAL and Division 26 - ELECTRICAL, for coring and drilling for all items to be installed by mechanical and electrical trades, except as otherwise indicated.
  - 5. Division 22 – PLUMBING, 23 - MECHANICAL and Division 26 - ELECTRICAL, for items to be installed by mechanical and electrical trades, except as otherwise indicated.

### 1.3 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.
- B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.
- C. Coring: Any new penetration cut through existing or new construction using core drill and measuring no more than 6 inches in diameter, or 6 inches by 6 inches. Larger cores are considered under cutting.

### 1.4 RESPONSIBILITY FOR CUTTING AND PATCHING

- A. General: All cutting and patching shall conform to the requirements of this Section, whether or not the work is to be done by the Contractor, a Filed Subcontractor or other Subcontractor.
  - 1. Patching shall be performed so as to maintain the integrity of acoustical rating of adjacent construction.
- B. Coordination: The General Contractor shall be responsible for the following:
  - 1. Obtain locations and dimensions of penetrations required 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.
- C. Modifications with Structural Implications:
  - 1. Masonry construction: Coordinate the work of Subcontractors as required where modification to existing load-bearing masonry is shown on the Drawings.

2. Do not perform any work that will alter existing structural elements unless it is shown on the Drawings or proposed alterations have been approved in writing by the Engineer.
- D. Coring: All coring shall be performed by the trade requiring the new penetration.
- E. New Penetrations in Non-Masonry Construction:
  1. Exposed locations: Cutting and patching shall be provided by the trade(s) responsible for surrounding construction.
  2. Concealed locations: Cutting and patching shall be provided by the trade(s) responsible for surrounding construction.

## 1.5 QUALITY ASSURANCE

- A. 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. Operating elements include but are not limited to the following:
  1. Primary operational systems and equipment.
  2. Air or smoke barriers.
  3. Fire-suppression systems.
  4. Mechanical systems piping and ducts.
  5. Control systems.
  6. Communication systems.
  7. Electrical wiring systems.
- B. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related 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. Miscellaneous elements include but are not limited to the following:
  1. Water, moisture, or vapor barriers.
  2. Membranes and flashings.
  3. Exterior curtain-wall construction.
  4. Equipment supports.
  5. Piping, ductwork, vessels, and equipment.
  6. Noise- and vibration-control elements and systems.
- D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Engineer's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

## 1.6 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

## PART 2 – PRODUCTS

### 2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials 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 match the visual and functional performance of in-place materials.

## PART 3 – EXECUTION

### 3.1 EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
  - 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
  - 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. 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. Refer to Section 01 50 00 - TEMPORARY FACILITIES AND CONTROLS for additional requirements.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

### 3.3 PERFORMANCE

- A. General: 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.
  - 2. Cutting of openings in roofs shall be delayed as long as feasible, and preferably until the Roofing Subcontractor is at the site and can provide permanent roof covering immediately. Otherwise, protect roof openings so made in a weather tight manner until permanent roof is installed. Protect existing roofing to remain. Do not damage or alter existing roofing and flashing to remain when doing work under this Section. Refer to Section 01 50 00 - TEMPORARY FACILITIES AND CONTROLS, for additional requirements for protection from the weather.
- B. 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 as small as possible, neatly to 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, in such a manner as to ensure a minimal difference between the cut area and new materials when patched.
  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: Use extreme care when cutting through construction containing concealed mechanical and electrical lines. Coordinate cutting and patching work with the following work to be performed under Division 21, 22, 23 and 26 Sections.
    - a. Cut off pipe or conduit in walls or partitions to be removed.
    - b. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
  6. Hazardous Materials: If unanticipated hazardous materials which would be disturbed by cutting and patching are discovered at any time during the course of work, cease work in the affected area only and continue work in other areas, and notify Engineer and the Owner of such discovery. Do not proceed with work in such affected areas until written instructions are received.
  7. Proceed with patching after construction operations requiring cutting are complete.
- C. 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 possible. Provide materials and comply with installation requirements specified in other Sections.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
  2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patch.
    - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
  3. 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, apply primer and intermediate paint coats 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 weather tight condition.

## 3.4 DEBRIS REMOVAL AND CLEANING

- A. Dispose of all materials under Section 017400 - CONSTRUCTION WASTE MANAGEMENT.
- B. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION

## PART 1 - GENERAL

### 1.1 GENERAL PROVISIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

### 1.2 DESCRIPTION OF WORK

- A. This Section includes administrative and procedural requirements for the following waste handling operations for the Work of the Contractor and all Subcontractors:
  - 1. Disposing of nonhazardous construction and demolition waste.
- B. Record keeping and documentation of Construction Waste Management is a requirement of this Section, as detailed below and additionally detailed in Section 013300 Submittals.
- C. Related Sections include the following:
  - 1. Section 015000 - TEMPORARY FACILITIES AND CONTROLS for environmental-protection measures during construction.

### 1.3 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- G. Co-mingling: Mixed construction and demolition waste that is removed to an off-site processing center. Processing Center's average recycling rate for mixed construction and demolition may be used for LEED calculation only if regulated by State or Local Authorities.
- H. Single Stream Recycling: Mixed recycled material that have been separated from non-recycled materials form removal to an off-site recycling processor.

### 1.4 PERFORMANCE REQUIREMENTS

- A. Not Applicable.

### 1.5 SUBMITTALS

- A. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.
- B. 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.
- C. 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.
- D. Qualification Data: For Waste Management Coordinator and refrigerant recovery technician.
- E. 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.

### 1.6 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

### PART 2 - PRODUCTS (NOT USED)

### PART 3 – EXECUTION (NOT USED)

END OF SECTION

## PART 1 - GENERAL

### 1.1 GENERAL PROVISIONS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

### 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. Coordination with Commissioning Agent
  - 4. Warranties and bonds
  - 5. Closeout requirements
  - 6. Inspection and Submittals for Substantial Completion
  - 7. Coordination with Independent Commissioning Agent
  - 8. Final Inspection and Submittals
  - 9. Final application and certificate for payment
  - 10. 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 002100- INSTRUCTIONS TO BIDDERS.
  - 2. Temporary facilities to be removed at the end of the Project: Section 015000 – TEMPORARY FACILITIES AND CONTROLS.
  - 4. 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 (NOT USED)

## 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. Employ experienced workmen or professional cleaners for final cleaning operations.
- C. Remove all construction facilities, debris, and rubbish from the Owner's property and legally dispose of same beyond site limits.
- D. Broom clean exterior paved surfaces, and rake clean other surfaces of the grounds.
- E. 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.
- F. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from exposed interior and exterior surfaces.
- G. Leave pipe and duct spaces, chases, and furred spaces thoroughly clean.
- H. Repair, patch and touchup marred surfaces to specified finish, to match adjacent surfaces.
- I. 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.
- J. 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.
- K. 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.
- L. 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 Engineer 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 Engineer's supervision.

## 3.3 WARRANTIES AND BONDS

- A. Compile specified warranties and bonds, review to verify compliance with Contract Documents, and submit to Engineer 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 Engineer receives the list, the Engineer 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 Engineer determines that the Contractor's list is not complete, the Engineer will notify the Contractor. The Contractor shall provide a complete list before the Engineer will complete his inspection.
- C. If the Engineer'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 Engineer 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: Engineer 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 Engineer. Engineer 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. Work is completed, and ready for inspection.

- B. Engineer will begin inspection within seven (7) days after receipt of above referenced Contractor's Certification.
- C. Should the Engineer consider the Work is substantially complete in accordance with requirements of Contract Documents, the Engineer will request Contractor to make Project Closeout submittals.
- D. Should the Engineer consider that the Work is not substantially complete:
  - 1. The Engineer 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 Engineer certifying that the Work is complete.

### 3.6 COORDINATION WITH INDEPENDENT COMMISSIONING AGENT

- A. Not Applicable

### 3.7 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. Evidence of Compliance with requirements of governing authorities.
  - 7. Punch list with schedule.
  - 8. Final Record Documents
- B. Evidence of compliance with authorities' requirements shall include:
  - 1. Certificates of compliance for flame and smoke, and fire rating.
  - 2. Certificates of Inspection:
    - a. Mechanical
    - b. Electrical
  - 3. Certificate of Occupancy
- C. Submit Certificate of Insurance for products and completed operations.
- D. instructions: Instruct Owner's personnel in the operation of all systems, mechanical, electrical and other equipment.

### 3.9 FINAL INSPECTION

- A. The Contractor shall complete or correct all remaining items on the 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 Punch List have been completed or corrected, the Contractor shall submit written certification that the items on the Punch List have been completed and corrected. This certification shall include a copy of the 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 Engineer 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 Engineer 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 Engineer to perform additional inspections, until all items on the Punch List are completed.

### 3.10 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 Engineer.

### 3.11 FINAL APPLICATION AND CERTIFICATE FOR PAYMENT

- A. Contractor shall submit final application for payment in accordance with requirements of the GENERAL CONDITIONS.
- B. Engineer 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 Engineer, 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 Engineer.

### 3.12 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 will make inspection after notification to Contractor.
- C. Owner will promptly notify Contractor in writing of any observed deficiencies.

END OF SECTION

## PART 1 - GENERAL

### 1.1 DESCRIPTION

- A. Prior to the Contractor's request for final payment, the following record documents must be submitted to the Owner's Representative.
  - 1. Approved shop drawings and product data submittals.
  - 2. Operating and maintenance instructions.
  - 3. Written guarantee.
  - 4. Record drawings ("As Builts").
  - 5. Copy of valve schedules.
  - 6. Check, Test, and Start-up Service Reports addressed to and in favor of Owner where equipment is specified for this procedure.
  - 7. Receipts signed by Owner indicating Owner's receipt of any spare parts or equipment such as belts, valves, fuses, etc., required by other sections of this division to be furnished by the respective Contractor(s) and turned over to the Owner.
- B. Four (4) sets of the above record documents must be submitted to the Owner's Representative; three of the sets will be forwarded to the Owner and the Owner's Representative will retain one copy. Record documents shall be arranged in the following manner:
  - 1. Each set to be inserted in hard cover three ring binder(s). Each set must include one of each item required in Part. A.
  - 2. Items in the binder(s) are to be separated using 8 1/2" x 11" index dividers with plastic insert tabs. Tabs are to be labeled as required to identify each item in binder.
  - 3. Cover sheet in each binder indicating the following:
    - a. Date
    - b. Project title and number
    - c. Owner's name and address
    - d. Contractor's name and address
    - e. Engineer's name and address
    - f. Table of Contents listing contents of each section in the binder(s).
  - 4. All drawings to be inserted in pockets in the binder(s). Stapled sets of drawings will not be required to be inserted in binder pockets, but should be submitted with binder(s) and noted in Table of Contents.
- C. Contractor(s) shall submit all the record documents required in one submission, partial submissions will not be acceptable.
- D. Contractor shall also furnish an electronic copy, on disk, of the above record documents to the Owner's Representative.
- E. The Contractor shall ensure that their subcontractor(s) provide record documents as specified herein.

### 1.2 RECORD DRAWINGS

- A. The Owner's Representative shall supply the Contractor with one (1) set of the Contract Documents. It shall be the Contractor's responsibility to note on the Documents, as the work progresses, all deviations and changes therefrom. The Contractor shall ensure that their subcontractor(s) update the record drawings as the work progresses.

1. Owner's Representative shall furnish one (1) set of drawings, via email, to contractor for use in preparing record drawings.
- B. The Contractor(s) shall note all changes necessitated by field conditions, change order(s), etc. on "As Built" Drawings.
  1. Drawings provided are schematic and may not accurately represent field conditions.
    - a. It shall be the Contractor's responsibility to record actual field conditions on "As Built Drawings".
    - b. Shall include actual panel, fixture and equipment locations, sizes, etc.
  2. Examples:
    - a. Equipment locations (exposed and concealed), dimensioned from prominent building lines.
    - b. Modifications, and actual equipment and materials installed.
- C. Contractor shall submit to Owner's Representative one "hard" copy and one electronic copy (on disk).
- D. Final payment will be made only after receipt of "As-Built" Drawings.

## 1.3 OPERATING INSTRUCTIONS AND TRAINING

- A. Upon completion of his work, the Contractor shall instruct the Owner and his Representative in the complete operating and maintenance procedures and requirements of all equipment, materials and systems installed as part of this Contract.
- B. Sections of the specifications that require training and education may be presented to the Owner and Owner's Representative for their consideration as a comprehensive package that expedites the general intent of the entire division of work.
  1. The Contractor shall be responsible for ensuring that Operating Instructions and training required to be furnished by their subcontractor(s) is satisfactorily completed.

END OF SECTION

## PART 1 - GENERAL

### 1.1 DESCRIPTION

- A. The contract work, materials and equipment shall conform to the applicable requirements of all governing codes, rules and regulations of current issue including, but not necessarily limited to the following:
  - 1. All equipment shall meet the requirements of the Energy Conservation Chapter of the Massachusetts State Building Code.
  - 2. Ductwork, including all components and accessories, shall conform to requirements of the latest editions of the various standards published by Sheetmetal and Air Conditioning Contractor's National Association, Inc. (SMACNA).
  - 3. All installations shall conform to design standards as outlined in ASHRAE handbooks, latest edition.
  - 4. All installations and materials shall conform to applicable Massachusetts State and Local building construction codes.
  - 5. All system testing, inspection and balancing shall conform to the requirements of the Associated Air Balance Council (AABC).
  - 6. Sprinkler systems shall comply with NFPA.
  - 7. Electrical systems shall comply with the National Electric Code (NEC).
  - 8. Electrical equipment shall conform to requirements of NEMA, Massachusetts Fire Prevention Code (527 CMR) and any governing body having jurisdiction over construction.
  - 9. Electrical equipment and/or materials shall bear label of Underwriter's Laboratories, Inc.
  - 10. Piping materials shall conform to applicable requirements of ASTM – Regulations and Standards for Pipe and Pipe Fittings.
  - 11. All pressure piping installations shall conform to latest edition of ANSI/ASME B31.9 Building Services Piping Code.
  - 12. Pressure vessels, when required, either fired or unfired, shall be constructed and stamped in accordance with ASME Codes. Each vessel shall have Manufacturer's Data Report, containing Certificate of Shop Inspection, filed with Engineer.
  - 13. When codes or regulations are not consistent, the more stringent code or regulation shall apply.
  - 14. All installations shall conform to requirements of the Owner's insurance carriers.
  - 15. Comply with all rules, regulations and requirements as set forth by OSHA, NFPA and the EPA.

### 1.2 NON-COMPLIANCE

- A. Should the Contractor perform any work that does not comply with the requirements of the applicable building codes, state laws, local ordinances and industry standards, he shall bear all costs arising in correcting the deficiencies.

### 1.3 INSPECTIONS

- A. During and upon completion of the work, the Contractors shall obtain and submit to the Owner's Representative:
  - 1. Any local certificate required.
  - 2. Said certificate(s) shall be submitted to the Owner's Representative before final payment is made.
- B. The Contractor shall obtain and pay for all tests, inspections, permits and fees necessary for the project.

## 1.3 APPLICABLE CODES

- A. All workmanship and materials shall conform to all state laws, local ordinances, local utility company regulations, and applicable Codes and Standards. In case of conflict with the Contract Drawings and Specifications, such laws, regulations and codes shall govern, except that the Contract Drawings and Specifications shall apply wherever they may require workmanship or materials other than required by the Codes and Standards. Applicable Codes and Standards shall include all pertinent requirements of the following Organizations:
1. Energy Conservation Code of Massachusetts
  2. Massachusetts Building Code
  3. Local Codes
  4. National Fire Protection Association (NFPA)
  5. Public Health Service Regulations
  6. Local Utility Standards & Regulations
  7. American National Standards Institute (ANSI)
  8. Certified Ballast Manufacturer (CBM)
  9. Electrical Testing Laboratories (ETL)
  10. Independent Testing Laboratories (ITL)
  11. National Electrical Code (NEC) Latest Edition
  12. National Electrical Manufacturers Association (NEMA)
  13. Underwriters Laboratories (UL)
  14. American Society for Testing & Materials (ASTM)
  15. Insulated Power Cable Engineers Association (IPCEA)
  16. Institute of Electrical and Electronic Engineers, Inc. (IEEE)

## 1.5 PERMITS

- A. If any permits are required, it shall be the full responsibility of the CONTRACTOR to obtain and pay for all appropriate permits from all applicable agencies, prior to installation of any equipment.

END OF SECTION

## **PART 1 - GENERAL**

### **1.1 INTRODUCTION**

- A. The Contractor shall furnish all labor, materials, equipment, and services necessary for, and incidental for Cleaning Services as specified herein.
- B. This project will require cleaning beyond what is customarily expected of a Contractor under the "broom clean" concept.
- C. The Owner's Representative will not give any warning to the Contractor. Should debris accumulate over several days the Owner's Representative will order any of the specialty cleaning firms to clean and the Contractor will be billed accordingly.

### **1.2 QUALIFIED SPECIALITY CLEANING FIRMS**

- A. The Owner will retain an independent firm to perform cleaning services in the event the Contractor fails to comply with this Section.

## **PART 2 — OMITTED**

## **PART 3 — EXECUTION**

### **3.1 VACUUM CLEANING SCHEDULE**

- A. Includes all mechanical rooms at the completion of the demolition work and upon final completion of the work.
- B. Includes "Construction Area" and contiguous areas at the completion of each construction "day".

### **3.2 MOP CLEANING SCHEDULE**

- A. Mop clean boiler room floor upon completion of the work.

### **3.3 BROOM CLEANING SCHEDULE**

- A. Broom cleaning shall be performed by the Contractor at the end of each working day when dust and granular debris has accumulated such as: saw dust, concrete dust, masonry dust, etc.
- B. And when directed by the Owner's Representative.

### **3.4 HAND CLEANING SCHEDULE**

- A. During of each working day.
- B. And when directed by the Owner's Representative.

### **3.5 DEBRIS REMOVAL ROUTE/RECEPTACLE**

- A. The Contractor shall remove all construction debris by way of the designated door(s).
  - 1. Coordinate with the Owner's on-site representative.

### **3.6 WIPE CLEAN**

- A. The Contractor shall wipe clean all mechanical equipment within the mechanical rooms at the completion of the work.

END OF SECTION



## DIVISION 26 SPECIFICATIONS

## ELECTRICAL

## PART 1 - GENERAL

### 1.01 GENERAL

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.
  - 1. The Electrical Contractor (Sub-Contractor to the MC) is herein referred to as "EC" and is responsible for all Electrical work.
  - 2. The EC shall provide all items, articles, equipment, tools, appliances, materials and methods required for complete systems.
- B. Abbreviations:
  - 1. GC:
    - a. The General (Mechanical) Contractor performing the general construction work of the Project. The GC is responsible for all work designated by GC.
  - 2. MC:
    - a. The Mechanical (Prime/General) Contractor performing the Mechanical and Heating, Ventilating and Air Conditioning work.
    - b. The MC has also been referred to as "HVAC Contractor", or the like, within these contract documents.
    - c. All like titles shall mean "MC".
  - 3. TC:
    - a. The Temperature Control Contractor (Sub-Contractor to the MC) performing the temperature control/sequence of operation work of the Project.
    - b. The TC has also been referred to as "BAS Contractor", or the like, within these contract documents.
    - c. All like titles shall mean "TC".
  - 4. EC:
    - a. See above.
  - 5. The above abbreviations and definitions are not intended to define contracts and/or subcontracts but only as reference to where common Trade work is shown on the drawings or described in the specifications.
- C. Definitions:
  - 1. Noted:
    - a. As indicated on drawings and/or specified.
  - 2. Indicated or Shown:
    - a. As indicated or shown on drawings.
  - 3. Concealed:
    - a. Embedded in masonry or other construction, installed behind wall furring, within partitions or hung ceilings (permanent or removable), in trenches, or in crawl spaces.
  - 4. Exposed:
    - a. Not installed underground or concealed.
  - 5. Piping:
    - a. Pipe, fittings, flanges, valves, controls, hangers, traps, drains, insulation and items necessary or required in connection with or relating thereto.
  - 6. Wiring:
    - a. Conduits, fittings, wire, junction and outlet boxes, switches, cutouts, and receptacles and items necessary or required in connection with or relating thereto.

- 7. Control wiring:
  - a. that wiring which is used for the logic control of systems and is generally 120 volts (AC or DC) or less. Such wiring methods are typically used by temperature control, communications and other automatic system.
- 8. Power wiring:
  - a. that wiring which is used for other than logic control of systems and is generally 120 volts single phase and three phase AC. Such wiring methods are typically used for power and lighting system.
- D. Examine all Drawings and all other Sections of the Specifications for requirements therein affecting the work of this Section.
- E. The Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01.
- F. The work of this Section is shown on drawings:
  - 1. E-100
- G. The work of this section includes the following Specifications:
  - 1. Division 00
  - 2. Division 01
  - 3. Section 26 00 05
- H. The Electrical Subcontractor (EC) shall refer to all the Drawings enumerated in the List of Drawings in the title sheet for a full comprehension of the work to be done and for conditions affecting the location and placement of his/her equipment and materials. These Drawings are intended to be supplementary to the Specifications and any work indicated, mentioned, or implied in either is to be considered as specified by both. Should the character of the work herein contemplated or any matter pertaining thereto by not sufficiently explained in the Specifications or Drawings, the Electrical Subcontractor may apply to the Architect-Engineer for further information and shall conform to such when given, as it may be consistent with the original intent. The Architect - Engineer reserves the right to make any reasonable changes in location prior to installation at no expense to the Owner. All lines are diagrammatic and exact locations are subject to the approval of the Architect-Engineer.

## 1.02 SUMMARY

- A. Scope of Work: Provide all labor, materials, tools, equipment, transportation and services necessary for and incidental to completion of all electrical work as indicated on the Drawings and/or specified herein.
  - 1. The scope of work consists of the installation of all materials to be furnished under Section 26 00 05, and without limiting the generality thereof, consists of furnishing all labor, materials, equipment, plant, transportation, rigging, staging, appurtenances, and services necessary and/or incidental to properly complete all work as shown on the Drawings, as described in the Specifications, or as reasonably inferred from either, in the opinion of the Architect-Engineer.

## 1.03 DESCRIPTION OF WORK

- A. **Work included:** Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:
1. Installation of boxes, raceway, wiring and terminations.
  2. Installation of circuits for equipment and controls
  3. Feeders and branch circuits
  4. Circuit breakers
  5. Fire alarm devices to support HVAC renovation.
  6. Coordination with other contractors
  7. Keeping the site clean

## 1.04 DRAWING USE AND INTERPRETATION

- A. The drawings are diagrammatic and indicate the general arrangement of systems and equipment unless indicated otherwise by dimensions or details. Install work substantially as indicated. Exact equipment locations and raceway routing, etc. shall be governed by actual field conditions and/or instructions of the Architect/Engineer.

## 1.05 COMPLETE SYSTEMS

- A. General: Furnish and install all materials as required for complete systems, including all parts and labor obviously or reasonably incidental to a complete installation, whether specifically indicated or not. All systems shall be completely assembled, tested, adjusted and demonstrated to be fully operational, prior to Owner's acceptance.
- B. Wiring: The wiring specified and/or shown on the Drawings is for complete and workable systems. Any deviations from the wiring shown due to a particular manufacturer's or subcontractor's requirements shall be made at no cost to either the Contractor or the Owner.

## 1.06 CODES AND REGULATIONS

- A. Non-Compliance: Should any work be performed which is found not to comply with any of the below codes and regulations, provide all work and pay all costs necessary to correct the deficiencies.

## 1.07 REFERENCE STANDARDS

- A. Comply with the latest published standards of the following associations and organizations, where applicable, as minimum requirements:
1. (ADA) Americans with Disabilities Act
  2. (ANSI) American National Standards Institute
  3. (ASTM) American Society for Testing and Materials
  4. (CBM) Certified Ballast Manufacturers
  5. (ETL) Electrical Testing Laboratories
  6. (ICEA) Insulated Cable Engineers Association
  7. (IEEE) Inst. of Electrical and Electronics Engineers
  8. (IES) Illuminating Engineering Society

- 9. (NBFU) National Board of Fire Underwriters
- 10. (NEMA) National Electrical Manufacturers Association
- 11. (NEC) National Electrical Code
- 11. (NESC) National Electric Safety Code
- 12. (NFPA) National Fire Protection Association
- 13. (UL) Underwriters' Laboratories

## 1.08 QUALITY ASSURANCE

- A. Manufacturers' Qualifications: Not less than (3) years experience in the actual production of the specified (or similar) products.
- B. Installers' Qualifications: Firm having not less than (5) years experience in the installation of electrical systems and equipment similar in scope and complexity to those required for this Project, and having successfully completed at least ten comparable scale projects.
- C. Incidental Work: Painting, patching, welding, carpentry and the like related to or required for Division 26 work shall be performed by craftsmen skilled in the appropriate trade, and shall be provided for under Division 26, unless indicated otherwise.

## 1.09 SUBMITTALS

- A. General: Prepare and submit for approval, per the procedures set forth in Division 1, all submittals required by Division 1, this Section, and by all other Contract Documents for this Project.
- B. Number of Copies: As indicated in Division 1, or elsewhere in the Contract Documents, Electronic Format (PDF).
- C. Product Data: Submit for equipment, devices and materials to be used on the Project, as listed below. Product Data to consist of manufacturer's standard catalog cuts, descriptive literature and/or diagrams, in 8-1/2" x 11" format, and in sufficient detail so as to clearly indicate compliance with all specified requirements and applicable standards. Mark each copy to clearly indicate proposed product, included options, accessories, finish, size, type, etc. Submit all Product Data of the Project in a single submission initially. Submit Product Data for the following:
  - 1. Disconnects
  - 2. Raceway & Conductors
  - 3. Circuit breakers for existing panels.
  - 4. Receptacles and devices
  - 5. Fire alarm components for existing system modifications.

## 1.10 INSPECTIONS

- A. General: During and upon completion of the work, arrange and pay all associated costs for inspections of all electrical work installed for the Project, in accordance with the Conditions of the Contract.
- B. Inspections Required: As per the laws and regulations of the local and/or state agencies having jurisdiction at the Project site.

- C. Inspection Agency: Approved by the local and/or state agencies having jurisdiction at the Project site.
- D. Certificates: Submit all required inspection certificates.

## 1.11 GUARANTEE AND SERVICE

- A. Notwithstanding any other requirements of this contract, the Electrical Subcontractor shall guarantee the performance of the installation and equipment included in this Section for one year from the date of Substantial Completion. Should any defects in materials or workmanship appear during this period, they shall be corrected or replaced by the Electrical Subcontractor to the satisfaction of the Architect, and at no expense to the Owner.
- B. Provide manufacturer's standard warranties on all specified items.

## 1.12 PERMITS

- A. The electrical subcontractor shall obtain all electrical permits.

## 1.13 DRAWINGS & SPECIFICATIONS

- A. Intent:
  - 1. Provide all items and work indicated on the drawings and all items and work called for in the specifications in accordance with the Contract Documents. This includes all incidentals, equipment, appliances, services hoisting, scaffolding, supports, tools, supervision, labor, consumable items, fees, licenses, etc., necessary to provide complete and workable electrical systems.  
Perform start-up, commissioning and testing of each item and system to provide fully operable systems.
  - 2. Neither the specifications nor the drawings undertake to illustrate or describe all items necessary for the work; it is expected that, after review of the drawings and specifications, the Contractors shall be completely familiar with the function of all items included and that his bid shall reflect the inclusion of all hangers, racks, inserts, etc., necessary for a complete and operable system.
  - 3. Items of work shown on the drawings or called for in the specifications shall be furnished and installed as appearing on both drawings and specifications.
    - 4. When materials and equipment is provided by other trades or the Owner. The Contractors shall examine the Contract Documents to ascertain these requirements. Unless specifically indicated as being supplied or installed by others, all items of work shown on the drawings or indicated in the specifications shall be included by the Contractors in their bid.
  - 5. Unless indicated by specific dimensions, drawings are meant to be diagrammatic. Exact equipment locations and routing of piping, ductwork, conduit, wireway, cabletray, etc., shall be governed by field conditions and/or Owner's Representative's instructions.
  - 6. All dimensions which relate to the building shall be taken as construction progresses. All errors incurred as a result of the Contractors' failure to check or verify dimensions, measurements, etc., shall be corrected at the Contractors' expense.
  - 7. The Contractors shall review the drawings for the work of other trades, informing the Owner's Representative of any conditions which obstruct, interfere with, or in any

- way prevent him from completing his work in a first class manner.
- B. Contractor's attention is directed to the fact that bidding documents may differ from the actual construction documents and/or the engineering drawings may differ from the architectural base drawings.
1. Before commencing any construction work, the Contractors shall verify with the Owner's Representative that the Contractors' documents are the latest issued documents.

## **1.14 PROTECTION OF EQUIPMENT**

- A. The Contractors shall at his own expense protect his work, material and equipment as is liable to injury during the construction period. The Contractors shall be held responsible for all damages and theft until his work is fully and finally accepted.

## **1.15 OBSTACLES, INTERFERENCES & COORDINATION**

- A. The drawings show the general arrangement of equipment and accessories. Drawings do not indicate all offsets, fittings, accessories and changes in elevation which may be necessary. The Contractors shall make all changes in equipment, locations, etc., to accommodate the work and to avoid obstacles at no increase in remuneration. The Contractors shall provide offsets, fittings and accessories as may be required to meet such field conditions.
- B. Equipment shall be installed to avoid interferences with the operation, servicing and maintenance of equipment.

## **1.16 PRODUCTS**

- A. If products and materials are specified or indicated on the drawings for a specific item or system, those products or materials shall be used. If products and materials are not listed in either of the above, use first class products and materials, subject to approval of shop drawings.
- B. All products shall be new, clean, undamaged, and free of defects and corrosion.
- C. All products shall be shipped and stored in a manner which shall protect them from damage, weather and entry of debris. If items are damaged, they shall not be installed. The Contractor shall take immediate measures to obtain replacement or repair in order to maintain the schedule.
- D. The Contractor shall verify that all materials he or his suppliers select conform to the requirements of the drawings and specifications. Transmittal of drawing and specification information to manufacturers supplying materials, and adherence to these requirements is the Contractor's responsibility. Approval of a manufacturer's name by the Engineer does not release the Contractor of the responsibility for providing materials which comply in all respects with the requirements in the contract documents.

## 1.17 BASIS OF DESIGN

- A. The Basis of Design, as scheduled or identified on the contract documents, shall be considered to set the minimum standard for all respective equipment submittals.
  - 1. Substitutions to the Basis of Design shall meet, or exceed the performance scheduled or identified on the contract documents.
    - a. If no such performance has been scheduled or identified on the contract documents, the substituted product shall meet, or exceed the performance as published by the manufacturer of the Basis of Design.
  - 2. Substitutions to the Basis of Design shall be provided, at no additional cost to Owner, with all the standard features, trim, etc. as provided by the manufacturer of the Basis of Design.
  - 3. Non-standard options shall be provided as scheduled or identified on the contract documents at no additional cost to the Owner.

## 1.18 RECONSTRUCTION WORK

- A. The Contractor shall inspect the site and become familiar with the condition of the premises and the scope and character of work required. Additional compensation for adverse field conditions shall not be approved.
- B. The Contractor shall minimize interference with the working routine of occupied areas, by coordinating the performance of his work in a manner acceptable to all groups involved.
- C. The Contractor shall not interrupt any of the building's services in any way without the expressed permission of the Owner. Ample written notice of shutdowns shall be given well in advance to the Owner. Interruptions and interference shall be made as brief as possible and only at times as stated by the Owner. When temporary loss of services is unavoidable, it shall be made at times as shall cause the least interference with the established routine.
- D. The Contractor shall obtain the Owner's Representative's permission before utilizing any room or any other part of the building as a shop.

## 1.19 INSTALLATION

- A. All work described in these specifications or shown on the drawings and all work required by this Contract shall be executed in a thoroughly substantial and craftsmanlike manner by skilled mechanics in the various trades involved.  
Follow manufacturer's instructions for installing, connecting and adjusting all equipment.

## 1.20 SUPPORTS

- A. The Contractors shall furnish and install all necessary clamps, brackets, angles and all other items for the proper support of equipment whether indicated on drawings or not.
- B. All supports necessary for mounting and/or supporting equipment, fixtures, apparatus, etc., shall be of steel or similar material. Wood supports are not acceptable. Where used in corrosive environments, supports shall be suitably protected from corrosion.



## 1.21 ELEVATIONS

- A. The Contractor(s) who "owns" the equipment shall be responsible to set and check finish elevations or inverts. Prior to a Contractor(s) using any established bench mark, that Contractor(s) shall ascertain if that bench mark is in fact true and accurate.

## 1.22 ANCHOR BOLTS, SLEEVES, INSERTS AND OPENINGS

- A. The Contractors shall layout and install their work in advance of finish construction.
- B. The Contractors shall furnish all sleeves for passage of conduits through structural masonry and concrete walls, floors, roof and elsewhere as shall be required for the proper protection of each pipe and duct passing through building surfaces.
- C. The Contractors shall secure all large equipment items with high strength bolts, washers and locknuts. Embedded anchor bolts shall be drilled and set perpendicular to the face of the concrete. Use beveled washers to allow nuts to seat flush on bolts slightly out of perpendicularity. Level all equipment and machinery with wedges, shims and jack bolts and grout under the entire bearing surface.

## 1.23 PLACEMENT OF CONCRETE

- A. See Division 03 for information (if applicable).

## 1.24 CUTTING AND REPAIRING

- A. See Section 01 73 29 – CUTTING AND PATCHING.

## 1.25 EQUIPMENT LAYOUT

- A. Install all equipment to permit removal (without damage to other parts) of coils, fan shafts and wheels, filters, belt guards, sheaves, drives, motors, disconnects, etc. and all other parts requiring periodic replacement or maintenance.
- B. Provide access panels in equipment, ducts, etc., for inspection of interiors and for proper maintenance.
- C. Arrange equipment to permit access to valves, cocks, traps, starters, motors, control components and to clear the openings of swinging doors and access panels.
  - 1. The Contractors shall provide the Owner's Representative with all special tools needed for proper operation, adjustment and maintenance of equipment.

## 1.26 CLEANING

- A. The Contractors shall clean up and remove from the site all rubbish, debris and trash accumulated during the day as a result of Contractors' work or his presence on the job.
- B. Also see Section 01 74 19 – CONSTRUCTION & DEMOLITION WASTE MANAGEMENT
- C. Also see Section 01 77 00 – PROJECT CLOSEOUT PROCEDURES

## 1.27 ADMINISTRATION AND SUPERVISION

- A. See Section 01 31 00 – PROJECT MANAGEMENT AND COORDINATION.

## 1.28 REGULATORY REQUIREMENTS

- A. Comply with all applicable federal and state laws, and all local codes, by-laws and ordinances.
- B. Where provisions of the Contract Documents conflict with any codes, rules or regulations, the latter shall govern. Where the contract requirements are in excess of applicable codes, rules or regulations, the contract provisions shall govern unless the Designer rules otherwise.
- C. Request inspections from authorities having jurisdiction, obtain all permits and pay for all fees and inspection certificates as applicable and/or required. All permits and certificates shall be turned over to the Owner at the completion of the work. Copies of permits shall be given to the Owner prior to the start of work.
- D. Unless otherwise specified or indicated, materials and workmanship and equipment performance shall conform with the latest edition of the following standards, codes, specifications, requirements and regulations:
  - 1. State Building Code
  - 2. State Mechanical, Plumbing, Fire Protection and Electrical Codes
  - 3. National Fire Protection Association (NFPA)
  - 4. Local Town Regulations and By-laws
  - 5. Underwriter's Laboratories, Inc. (UL)
  - 6. National Electrical Manufacturer's Association (NEMA)
  - 7. American National Standards Institute (ANSI)
  - 8. All work shall meet or exceed any other state and local codes and/or authorities having jurisdiction including all other standards indicated herein.

## 1.29 VISIT TO SITE

- A. Before estimating work, visit the project site and verify all measurements and field conditions affecting the work. The contractor is fully responsible for the correctness of all measurements and for any connections to existing work. Submission of bid is considered evidence that this contractor has visited and examined the site. No consideration, claims, charges, or compensation will be granted for extra work as a result of the contractor's failure to visit the site or verify conditions and measurements.

## 1.30 SURVEYS AND MEASUREMENTS

- A. Base all required measurements, both horizontal and vertical, on reference points established by the General Contractor and be responsible for the correct laying out of the electrical work. In the event of a discrepancy between actual measurements and those indicated, notify the General Contractor in writing, and do not proceed with the work required until written instructions have been issued by the General Contractor.
- B. The Contractor is solely responsible for verifying field measurements, conditions, and drawing and specifications information (for all trades) before ordering materials and equipment and before commencing work. The Contractor is solely responsible for verifying shop drawings (including shop drawings of other trades) before releasing related materials and equipment and before rough in. No consideration, claims, charges, or compensation will be granted due to any differences between the actual dimensions and any dimensions indicated on the drawings.
- C. Report any apparent discrepancies or conflicts found at once to the Architect- Engineer for consideration and wait for a decision before proceeding with any work in the affected area.
- D. The Architect-Engineer's decisions in cases of discrepancies, conflicts, and related to verification of measurements and conditions are final and binding upon the contractor, make all installation accordingly.

## 1.31 EXISTING CONDITIONS AND UTILITIES

- A. Information and data indicated on the drawings regarding existing conditions (including underground utilities) is from the best available sources. However, no assurance is made as to completeness and/or accuracy.
- B. Contact all utility companies operating in the project vicinity (water, gas, sewage, electric, telephone, cable television, etc.) and the owner's maintenance department (where applicable) and verify all existing underground systems before any excavation commences.

## 1.32 ITEMS NOT SHOWN OR SPECIFIED

- A. Provide any items of material not indicated on the drawings and/or not specified, but which are required for the complete and proper installation and/or operation of any part of the work, as if indicated and specified.
- B. Provide any work not indicated on the drawings and/or not specified, but which is required for compliance with applicable codes and regulations, as if indicated and specified.
- C. No consideration, claims, charges, or compensation will be granted for performing work required for complete and proper installation/operation or required for compliance with applicable codes and regulations.

## 1.33 CO ORDINATION

- A. Drawings are diagrammatic. They indicate general arrangements of systems and other work. They do not show all offsets required for coordination nor do they show the exact routings and locations needed to coordinate with structure and other trades and to meet Architectural requirements.
- B. Work shall be performed in cooperation with other trades on the project and so scheduled as to allow speedy and efficient completion of the work.
- C. Furnish to other trades advance information on locations and sizes of all access doors, electrical frames, electrical boxes, sleeves and openings needed for their work, and also furnish information and shop drawings necessary to permit trades affected by the work to install same properly and without delay.
- D. In all spaces, prior to installation of visible material and equipment, including access panels, review Architectural Drawings for exact locations and where not definitely indicated, request information from Designer. Where the work shall interfere with the work of other trades, assist in working out the space conditions to make satisfactory adjustments before installation. Without extra cost to the Owner, make reasonable modifications to the work as required by normal structural interferences. Pay the General Contractor for additional openings, or relocating and/or enlarging existing openings through concrete floors, walls, beams and roof required for any work which was not properly coordinated. Maintain maximum headroom at all locations. All piping, duct, conduit, and associated components to be as tight to underside of structure as possible.
- E. If any work has been installed before coordination with other trades so as to cause interference with the work of such trades, all necessary adjustments and corrections shall be made by the Contractor(s) involved without extra cost to the Owner.
- F. Where conflicts or potential conflicts exist and engineering guidance is desired, submit sketch of proposed resolution to Designer for review and approval.
- G. Protect all materials and work of other trades from damage which may be caused by the work, and repair all damages without extra cost to the Owner.

## 1.34 TYPICAL DETAILS

- A. Typical details where shown on the drawings shall apply to each and every item of the project where such items are applicable. They are not repeated in full on the drawings, which in many cases are diagrammatic only, but with the intention that such details shall be incorporated in full. Any alternate method proposed for use by the Contractor shall have the prior approval of the Designer.

## 1.35 ACCESSIBILITY

- A. Install all work such that parts requiring periodic inspection, operation, maintenance and repair are readily accessible.
- B. Furnish all access panels appropriate to particular conditions, to be installed by trades having responsibility for the construction of actual walls, floors or ceilings at required locations.

## **1.36 SUPPLEMENTAL SUPPORTING STEEL**

- A. Provide all supplementary steelwork required for mounting or supporting equipment and materials.
- B. Steelwork shall be firmly connected to building construction.
- C. Steelwork shall be of sufficient strength to allow only minimum deflection in conformity with manufacturer's published requirements.
- D. All supplementary steelwork shall be installed in a neat and workmanlike manner parallel to floor, wall and ceiling construction; all turns shall be made at forty-five and ninety degrees, and/or as dictated by construction and installation conditions.
- E. All manufactured steel parts and fittings shall be galvanized.

## **1.37 TOOLS AND EQUIPMENT**

- A. Provide all tools and equipment required for the fabrication and installation of the mechanical and electrical equipment at the site.

## **1.38 PORTABLE AND DETACHABLE PARTS**

- A. Contractors shall retain in their possession all portable and/or detachable parts and portions of materials, devices, equipment etc. necessary for the proper operation and maintenance of the mechanical and electrical systems until final completion of the work, at which time they shall be handed over to the Owner.

## **1.39 GUARANTEE/WARRANTY**

- A. Guarantee Work of this Section in writing for one year following the date of beneficial occupancy by the Owner. The guarantee shall repair or replace defective materials, equipment, workmanship and installation that develop within this period, promptly and to Owner's satisfaction and correct damage caused in making necessary repairs and replacements under guarantee within Contract Price.
- B. In addition to guarantee requirements of Division 01 and of Subparagraph A above, obtain written equipment and material warranties offered in manufacturer's published data without exclusion or limitation, in Owner's name.
  - 1. Upon receipt of notice from the Owner of failure of any part of the systems or equipment during the warranty period, the affected part or parts shall be replaced by this Contractor without any reimbursement.
  - 2. At nine months into the one-year guarantee period, the contractor shall perform a 100% test of all installed equipment. Any device and/or part found to be defective shall be repaired and/or replaced at no cost to the Owner. The Contractor shall notify the fire department one month in advance of the 100% test.
  - 3. Replace material and equipment that require excessive service during guarantee period as defined and as directed by Designer.
  - 4. Provide 24 hour service beginning on the date the project is accepted by

the Owner, whether or not fully occupied, and lasting until the termination of the guarantee period. Service shall be at no cost to the Owner. Service can be provided by this contractor or a separate service organization. Choice of service organization shall be subject to the Owner's approval. Submit name and a phone number that will be answered on a 24-hour basis each day of the week, for the duration of the service.

5. Submit copies of equipment and material warranties to the Owner before final payment.
6. At end of guarantee period, transfer manufacturers' equipment and material warranties still in force to the Owner.
7. This Paragraph shall not be interpreted to limit the Owner's rights under applicable codes and laws and under this Contract.
8. Other Sections of this Specification may specify warranty requirements that exceed those of this Paragraph. Those paragraphs will govern.
9. Use of systems provided under this Section for temporary services and facilities shall not constitute Final Acceptance of work by the Owner, and shall not initiate the guarantee period.
10. Non-durable items, such as electric lamps, shall be replaced up to the date of acceptance, such that they shall have had no more than 100 hours use prior to this date.
11. Provide manufacturer's engineering and technical staff at site to analyze and rectify problems that develop during guarantee period immediately. If problems cannot be rectified immediately to the Owner's satisfaction, advise the Owner in writing, describe efforts to rectify situation, and provide analysis of cause of problem. Designer will direct course of action.

#### **1.40 OPERATING, INSTRUCTION AND MAINTENANCE MANUALS**

- A. Refer to SECTION 01 78 39 – PROJECT RECORD DRAWINGS for information.  
In addition to requirements of 01 78 39, Contractor shall provide manuals as follows:
  1. Each copy of the approved operating and maintenance manual shall contain copies of approved shop drawings, equipment literature, cuts, bulletins, details, equipment and engineering data sheets and typewritten instructions relative to the care and maintenance for the operation of the equipment, all properly indexed. Each manual shall have the following minimum contents:
    - a. TABLE OF CONTENTS
      - i. Introduction
        - 1.) Explanation of manual and its purpose and use.
        - 2.) Description of the electrical systems.
        - 3.) Safety precautions necessary for equipment.
        - 4.) Illustrations, schematics and diagrams.
        - 5.) Installation drawing.
      - ii. Maintenance
        - 1.) Maintenance and lubricating instructions.
        - 2.) Replacement charts.
        - 3.) Trouble shooting charts for equipment components.
        - 4.) Testing instructions for each typical component.
        - 5.) Two typed sets of instructions for ordering spare parts. Each set shall include name, price, telephone number and address of where they may be obtained.

*iii. Manufacturer's Literature*

- 1.) The equipment for which shop drawings have been submitted and approved.

## 1.41 OPERATING INSTRUCTIONS

- A. Refer to SECTION 01 78 39 – PROJECT RECORD DRAWINGS for information. In addition to requirements of 01 78 39, Contractor shall:
1. Upon completion of his work, the Contractor shall instruct the Owner or his Representative in the complete operating and maintenance procedures and requirements of all equipment, materials and systems installed as part of this Contract.
  2. Four (4) complete, bound sets of operating and maintenance instructions shall be supplied to the Owner's Representative for all systems. Instructions shall include cuts of the various items, including technical data for same, manufacturer's literature and maintenance instructions.

## 1.42 RECORD DOCUMENTS

- A. Refer to SECTION 01 78 39 – PROJECT RECORD DRAWINGS for information. In addition to requirements of 01 78 39, Contractor shall provide documents as follows:
1. The following record documents must be submitted to the Owner's Representative.
    - a. Approved shop drawings and product data submittals.
    - b. Operating and maintenance instructions for all systems.
    - c. Written guarantee.
    - d. Record drawings ("As Builts").
      - i. The Owner's Representative shall supply the Contractor with AutoCAD background floor plans.
      - ii. It shall be the Contractor's responsibility to note, as their work progresses, all deviations and changes therefrom.
      - iii. At the end of the project all deviations and changes shall be transferred to AutoCAD. Contractors shall furnish "As-Built" to the Owner's Representative.
      - iv. The Contractor shall note all changes necessitated by field conditions, change order, etc., at the completion of his portion of the work.
    - e. Copy of valve schedules.
    - f. Check, Test, and Start-up Service Reports addressed to and in favor of Owner where equipment is specified for this procedure.
    - g. Receipts signed by Owner indicating Owner's receipt of any spare parts or equipment such as belts, valves, fuses, etc., required by other sections of this division to be furnished by the Contractor and turned over to the Owner.
    - h. Four (4) sets of hard copies and two (2) electronic copies of the above record documents must be submitted to the Owner's Representative; three of the sets will be forwarded to the Owner and the Owner's Representative will retain one copy. Record documents shall be arranged in the following manner:
      - i. Each set to be inserted in hard cover three ring binder(s). Each set must include one of each item required in Part. A.
      - j. Items in the binder(s) are to be separated using 8 1/2" x 11" index dividers with plastic insertable tabs. Tabs to be labeled as required to

- identify each item in binder.
- k. Cover sheet in each binder indicating the following:
  - i. Date
  - ii. Project title and number
  - iii. Owner's name and address
  - iv. Contractor's name and address
  - v. Engineer's name and address
  - vi. Table of Contents listing contents of each section in the binder(s).
- l. All drawings to be inserted in pockets in the binder(s). Stapled sets of drawings will not be required to be inserted in binder pockets, but should be submitted with binder(s) and noted in Table of Contents.

## **1.43 QUALITY ASSURANCE**

- A. See Section 01 45 00 – QUALITY CONTROL

## **1.44 DELIVERY, STORAGE AND HANDLING**

- A. All materials for the work of this section shall be delivered, stored and handled so as to preclude damage of any nature. Manufactured materials shall be delivered and stored in their original containers, plainly marked with the products' and manufacturer's name. Materials in broken containers or in packages showing watermarks or other evidence of damage, shall not be used and shall be removed from the site.

## **PART 2 - PRODUCTS**

### **2.01 GENERAL**

- A. The scope of the work under this Section consists of the installation of all materials to be furnished under this Section and all work incidental thereto.
- B. All materials required for the installation of the work shall conform to Massachusetts State Building Codes 527 CMR, 780 CMR and the NEC.
- C. Where Specified: Division 26 materials and equipment shall be as specified in this Section and/or as indicated on the Drawings.
- D. General Requirements: All materials and equipment shall be in accordance with the Contract Documents and to the extent possible, standard products (except where special construction or performance features are called for) of the specified or acceptable manufacturers. All materials and equipment shall be new, clean, undamaged, and free of defects and corrosion.
- E. Acceptable Products: The product of a specified or acceptable manufacturer will be acceptable only when that product complies with or is modified as necessary to comply with all requirements of the Contract Documents.
- F. Common Items: Where more than one of any specific item is required, all shall be of the same type and manufacturer.



- G. UL Listing: All electrical materials and equipment shall be Underwriters' Laboratories (UL) listed and labeled, where UL standards and listings exist for such materials or equipment.

## 2.02 BUILDING WIRE

- A. General: All wiring systems to consist of individual wires installed in conduit or other indicated raceway, unless specifically specified or indicated otherwise.
- B. 600 Volt Class Wire: Single-conductor, uncoated copper conductors with type THHN/THWN insulation. Conductors size #10 AWG and smaller may be solid or stranded. Conductors size #8 AWG and larger shall be Class B stranded.
- C. Insulation Colors: As required for color coding requirements in Part 3. Wires #10 AWG and smaller to have color impregnated in insulation. Wires #8 and larger may use color impregnated insulation, or conductor ends may be taped.
- D. Acceptable Manufacturers: American Insulated Wire Corp, General Cable Corporation, Southwire Company, Okonite Company, or equal.

## 2.03 CONDUCTOR CONNECTORS

- A. General: UL-listed, factory fabricated, designed for the intended application, conductor type(s) and size(s), etc.
- B. Connectors (#10 AWG and Smaller): Nylon shell insulated metallic crew-on connectors.
- C. Termination (#10 AWG and Smaller, Stranded): Use nylon insulated crimp ring or fork type connectors for connecting conductors to screw terminals.
- D. Connectors (#8 AWG and Larger): Mechanical (bolted pressure) or compression type, with molded plastic insulators.
- E. Lugs (#8 AWG and Larger): Mechanical (bolted pressure) or compression type. F.

Acceptable Manufacturers: AFC Cable Systems, Hubbell Power Systems, O-Z/Gedney, 3M, Tyco Electronics Corp, Crouse Hinds, or equal.

## 2.04 HANGERS AND SUPPORTS

- A. Materials and Design: All hangers, supports, fasteners and hardware shall be zinc-coated or of equivalent corrosion resistance by treatment or inherent property, and shall be manufactured products designed for the application. Products for outdoor use shall be hot dip galvanized.
- B. Types: Hangers, straps, riser supports, clamps, U-channel, threaded rods, etc. as indicated and required.

## 2.05 SAFETY SWITCHES

- A. The EC shall furnish and install any indicated local safety switches.
- B. General: NEMA heavy duty, horsepower rated, fully enclosed, fusible or non-fused as indicated, quick-make/quick-break switching mechanism interlocked with cover and integral handles that accept a minimum of three padlocks.
- C. Neutral and Ground: Include insulated solid neutral terminal and/or solid grounding terminal where circuits include these conductors.
- D. Enclosures: NEMA types as specified below or as indicated. Provide NEMA-1 unless indicated otherwise.
- E. Ratings:
  - 1. Voltage, phases, amperages and fusing as indicated.
- F. Guards: Line shield guards to prevent contact with live parts.
- G. Contacts: Silver alloy, switch blades shall be de-energized in the open position.
- H. Lugs: Solderless type.

## 2.06 RACEWAY SYSTEMS

- A. General: EMT shall be used for feeder conductors.
- B. Raceway sizing: as required by the NEC (minimum) with oversized raceways as indicated and where required for ease of pulling cable. Minimum conduit size: 3/4-inch, unless indicated otherwise.
- C. Raceway types: listed flexible metal raceway and electrical metallic tubing. Shall be in conformance with applicable ANSI, NEMA, and UL standards. EMT shall comply with ANSI c80.3 and UL 797, FMC shall comply with UL 1.
- D. Fittings: all raceway fittings shall be steel or malleable iron, and ul-listed for the intended application. EMT fittings shall be compression type when used outdoors.
- E. Pull and junction boxes, and wireways: use as indicated and required. Junction and pull boxes for general indoor use (dry locations) shall be of galvanized code gauge steel construction, minimum 4" square by 1-1/2" deep, with screw-on covers. Wireways shall be UL listed sheet steel construction with screw-on covers. For damp or wet indoor locations, use boxes and wireways approved for such use.
- F. Pipe sleeves: rigid steel conduit or iron pipe.
- G. Fire stop: provide a fire resistant rating at least equal to the hourly fire resistance rating of the floor, wall or partition into which the firestop system is to be installed. Acceptable manufacturers: Dow Corning; Heavy Duty/Nelson; International Protective Coatings; Specified Technologies, Inc.

## 2.07 GROUNDING

- A. General: Conductors, clamps and connectors, etc. as indicated and required. B.

Provide service grounding as required by NEC article 250.

## 2.08 FIRE ALARM

- A. Wire

1. All fire alarm system modifications wiring shall be new.
2. Wiring shall be in accordance with local, state and national codes (e.g., NEC Article 760) and as recommended by the manufacturer of the fire alarm system. Number and size of conductors shall be as recommended by the fire alarm system manufacturer, but not less than 16 AWG for Initiating Device Circuits, Signaling Line Circuits, and 14 AWG for all Notification Appliance Circuits.
3. All wire and cable shall be listed and/or approved by a recognized testing agency for use with a protective signaling system.
4. Wire and cable not installed in conduit shall have a fire resistance rating suitable for the installation as indicated in NFPA 70 (e.g., FPLR).
5. Wiring used for the multiplex communication circuit (SLC) shall be twisted and unshielded and support a minimum wiring distance of 12,500 feet. The design of the system shall permit use of IDC and NAC wiring in the same conduit with the SLC communication circuit.
6. All field wiring shall be electrically supervised for open circuit and ground fault.
7. The fire alarm control panel shall be capable of t-tapping Class B (NFPA Style 4) Signaling Line Circuits (SLCs). Systems that do not allow or have restrictions in, for example, the amount of t-taps, length of t-taps etc., are not acceptable.

- B. Duct Smoke Sensor: Photoelectric type, with sampling tube of design and dimensions as recommended by the manufacturer for the specific duct size and installation conditions where applied. Sensor includes relay for fan shutdown.

1. Environmental compensation, programmable sensitivity settings, status testing, and monitoring of sensor dirt accumulation for the duct sensor shall be provided by the FACP.
2. The Duct Housing shall provide a supervised relay driver circuit for driving up to 15 relays with a single Form C contact rated at 7A@ 28VDC or 10A@ 120VAC. This auxiliary relay output shall be fully programmable. Relay shall be mounted within 3 feet of HVAC control circuit.
3. Duct Housing shall provide a relay control trouble indicator Yellow LED.
4. Compact Duct Housing shall have a transparent cover to monitor for the presence of smoke. Cover shall secure to housing by means of four (4) captive fastening screws.
5. Duct Housing shall provide two (2) Test Ports for measuring airflow and for testing. These ports will allow aerosol injection in order to test the activation of the duct smoke sensor.
6. Duct Housing shall provide a magnetic test area and Red sensor status LED.
7. For maintenance purposes, it shall be possible to clean the duct housing sampling tubes by accessing them through the duct housing front cover.
8. Each duct sensor shall have a Remote Test Station with an alarm LED and test switch.
9. A NEMA 4X weatherproof duct housing enclosure shall provide for the circulation of conditioned air around the internally/externally mounted addressable duct sensor housing to

maintain the sensor housing at its rated temperature range. The housing shall be UL Listed to Standard 268A.

10. Remote test switches with indicator LEDs shall be installed at the fire alarm control panel and located within the fire alarm control panel or in an enclosure similar to the fire alarm control panel next to the panel. Verify location with the fire department prior to installation.
11. Indicator LEDs will be located on the ceiling or on the wall below the duct smoke detector so that it is visible to the responder. Verify location with the fire department prior to installation.
12. This trade contractor shall verify the locations of the remote test switches and the LED indicator lights with the fire department prior to installation.

## **2.09 DISCONNECTING & OVERCURRENT PROTECTIVE DEVICES**

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
  1. Field confirm and match existing panel with circuit breakers compatible with existing manufacturer. Added circuit breakers shall be new and match existing circuit breaker in type and AIC rating.
- B. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with interrupting capacity to meet available fault currents.
  1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
  2. Molded-Case Circuit-Breaker (MCCB) Features and Accessories:
    - a. Standard frame sizes, trip ratings, and number of poles.
    - b. Lugs: Mechanical style, suitable for number, size, trip ratings, and conductor materials.
    - c. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge (HID) lighting circuits.
    - d. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.
    - e. Handle Clamp: Loose attachment for holding circuit-breaker handle in on position.

## **PART 3 - EXECUTION**

### **3.01 GENERAL**

- A. Letter and Intent: The installation of all electrical work shall be in accordance with the letter and intent of the Contract Documents, as determined by the Architect/Engineer.
- B. Installation Requirements: All materials and equipment shall be installed as recommended by the respective manufacturers, by mechanics skilled in the particular trade, in a neat and workmanlike manner, in accordance with the standards of the trade, and so as not to void any warranty or UL listing.
- C. Administration and Supervision: All electrical work shall be performed under the Contractor's direct supervision, using sufficient and qualified personnel as necessary to complete the work in accordance with the project progress and completion schedule. The Contractor shall assign one or more competent supervisors who shall have authority to accept and execute orders and instructions, and who shall cooperate with the other contractors and subcontractors, the Architect/Engineer and the Owner in all matters to resolve conflicts, avoid delays and complete the Project as efficiently as possible.

- D. All work shall be performed in strict conformance to State and National regulations governing electrical work. A licensed electrician shall be on site, supervising or performing all electrical work.
- E. Installation shall be by skilled workmen using proper equipment.
- F. Commencement of work shall be deemed as acceptance of existing conditions by the installer.
- G. Entire application shall be in strict accordance with the manufacturer's recommendations and all standards of the National Electrical Code.
- H. Inspection, Preparation and Coordination
  - 1. Secure any permits that may be required for the Work of this sections.
  - 2. The Electrical Contractor shall inspect all surfaces and areas that will receive his material and the job conditions as they exist, and report all conditions that may adversely affect his work. Notify Architect and General Contractor of all unsuitable conditions.
  - 3. Coordinate work with construction schedule and job progress.
  - 4. Minimize the duration of any electrical utility shutdowns, as premises will be occupied by tenants.
  - 5. The Electrical Contractor shall confer with the General Contractor and other Trades to coordinate his work and to properly locate systems to avoid conflict and interference
  - 6. Any interference with the work of the other Trades or with architectural or structural details shall be brought to the attention of the Engineer for decision before installation. Contractor's failure to coordinate his work will not relieve him of the responsibility to correct his work to suit building conditions.
- I. Existing Conditions: In general, existing electrical systems and devices are not shown on the Drawings unless pertinent to the remodeling work. Existing electrical conditions, where indicated, are based on casual field observations and/or drawings for previous construction, and must be field verified. Report any discrepancies to the Architect/Engineer before disturbing the existing installation.
- J. Examination: Prior to bidding, examine the Project site to determine all actual observable conditions. No additional compensation will be granted on account of extra work made necessary by the Contractor's failure to investigate such existing conditions.
- K. Inspection: Carefully inspect the Project site and become familiar with the existing systems and conditions, before proceeding with the work.
- L. Coordination: Coordinate all demolition and changeover work with all other trades on the Project, utility companies where applicable, and the Owner.
- M. Protection of Adjacent Materials: During execution of demolition work, give primary consideration to protecting from damage, the building structure, furnishings, finishes and the like, unless specifically indicated to be removed. Existing items or surfaces to remain, which are damaged as a result of this work shall be refinished, repaired or replaced to the satisfaction of the Owner, at no cost to the Contract.
- N. Patching: When electrical materials are removed, patch and finish walls, ceilings, floors and other surfaces to match surrounding surfaces. Provide blank coverplates, etc. as required. Materials used for patching shall be in conformance with the applicable sections of the Project Manual. Where materials are not specifically described, but required for proper completion of the work, they shall be as selected by the Contractor, subject to the Architect/Engineer's approval.

- O. Shutdowns: All shutdowns to existing electrical services and systems to be scheduled and acceptable, in writing, by the Owner.
- P. Existing Electrical Work to Remain: Protect and maintain access to existing electrical work which must remain. Reinstall any such existing electrical work disturbed.
- Q. Cleaning: Remove from the Project site all dirt, dust and debris, etc. resulting from demolition work, on a daily basis. Do not block or otherwise impair circulation in corridors, stairs, sidewalks, roadways or other traffic areas.

## 3.02 WIRING METHODS

- A. All wiring systems to be composed of individual 600 volt class wires installed in specified raceway systems.
- B. Conductor Material: Stranded Copper for all feeders. Branch Circuits: Stranded Copper for all branch circuits. Use of aluminum conductors is prohibited for this project.
- C. Minimum Wire Size: All branch circuit wiring shall be minimum #12 AWG. All control circuit wiring shall be minimum #14 AWG. Provide larger sizes as indicated or required.
- D. Branch Circuit Wire Sizes: Provide branch circuit wire sizes as indicated. Neutral wire sizes to match respective phase wire sizes unless indicated otherwise.
- E. Common Neutral: For branch circuit homeruns with two or three single-pole circuits (of different phases) common neutral may be not used, unless indicated otherwise. Provide separate neutral for each phase.
- F. Equipment Grounding Conductor Required: For each branch circuit run, provide an equipment grounding conductor, sized per NEC 250-95 (minimum, larger if so indicated) whether indicated or not.

## 3.03 WIRE INSTALLATION

- A. General: Install all wires, cables and associated items in compliance with all applicable requirements of the NEC, NEMA, UL and NECA's "Standards of Installation", and in accordance with the respective manufacturer's recommendations.
- B. Terminations: Furnish and install terminations, including lugs if necessary, to make all electrical connections indicated or required. Enclose all strands of stranded conductors in connectors and lugs.
- C. Tightening: Tighten all connectors, lugs, screws, bolts, Allen-heads and other electrical fasteners to torque values per manufacturer's written instructions.
- D. Restrictions: Do not substitute smaller wires with higher temperature rated insulations in lieu of the wires shown on the Drawings.
- E. Color Code: Color code all branch circuit wires as follows:
  - 1. Colors for 208/120-V or 240/120-Volt Circuits (1-Phase):
    - a. Phase: Black.
    - b. Neutral: White.

2. Colors for 208/120-V Circuits (3-Phase):
  - a. Phase A: Black.
  - b. Phase B: Red.
  - c. Phase C: Blue.
2. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.
  - a. Equipment Grounding Conductors: Green.

## 3.04 HANGERS AND SUPPORTS

- A. General: Rigidly support and secure all electrical materials, raceway and equipment to building structure using hangers, supports and fasteners, suitable for the use, materials and loads encountered. Provide all necessary hardware.
- B. Overhead Mounting: Attach overhead mounted equipment to structural framework or supporting metal framework. Do not make attachments to steel roofing, steel flooring or ceiling mineral tile.
- C. Wall Mounting: Support wall mounted equipment by masonry, concrete block, metal framing or sub-framing.
- D. Structural Members: Do not cut, drill or weld any structural member except as specifically accepted by the Project Architect.
- E. Independent Support: Do not support electrical materials or equipment from other equipment, ductwork or supports for same.
- F. Raceway Support: Rigidly support all raceways and cables from buildings structure, with maximum spacing per NEC, and so as to prevent distortion of alignment during pulling operation. Use acceptable hangers, clamps and straps for individual raceway runs. Do not use perforated straps or tie wires. Do not support electrical raceways, cables or other electrical materials from equipment of any trade or from ceiling support wires.
- G. Miscellaneous Supports: Provide any additional structural support steel brackets, angles, fasteners and hardware as required to adequately support all electrical materials and equipment.

## 3.05 RACEWAY SYSTEMS

- A. Raceway routing: as required by job conditions unless specific routes or dimensioned positions are indicated on the drawings. Install tight to slabs, beams and joists wherever possible. Route exposed conduit, and conduit installed above ceilings, parallel or perpendicular to walls ceilings and structural members. Install to maintain minimum headroom and to present a neat appearance. Run parallel raceways together with bends made from same center line. Verify exact locations of all raceways, pull boxes, and junction boxes. Resolve any conflicts before installation.
- B. Fire stop systems: install firestop systems in accordance with ul approved design details and the manufacturer's instructions. Install sleeves, conduits and cables with required clearance spaces, allowing installation of sealing materials. Do not exceed the outside diameter of the sleeve, conduit or cable by more than one inch or by less than 1/4 inch when making openings for penetrations. Install firestop systems so as to completely seal openings to prevent passage of smoke and water.

- C. Sizing: Size raceway as required by the National Electrical Code (minimum) with oversize conduits as indicated and where required for ease of pulling wire or cable.
- D. Minimum Conduit Size: 3/4" unless indicated otherwise.
- E. Types: Unless indicated otherwise, use raceway types as follows:
- F. Indoors, Concealed in Walls or Above Ceilings: EMT.
- G. Indoors, Exposed: Use rigid galvanized steel conduit below four feet above finished floor. EMT may be used above four feet.
- H. Flexible Metal Conduit: Use in dry locations only, for connections to vibrating equipment, and equipment requiring minor adjustments in positions, for final connections to recessed lighting fixtures, and between outlet boxes in stud partitions.
- I. MC cables – to be used where permitted by Code.

## 3.06 ELECTRICAL IDENTIFICATION

- A. General: Located nameplate, marking or other identification means on outside of front covers when above ceilings, when in mechanical or electrical equipment rooms, and when in other unfinished areas. Locate on inside of front cover when in finished rooms/areas. Use Contract Document designations for identification legends unless indicated otherwise.
- B. NEC Required Identification: Provide all equipment identification, warning signs, etc. as required by the NEC.
- C. Manufacturer Supplied Equipment Nameplates: Provide equipment nameplates and markings, with all information as required by NEMA and UL.
- D. Marking Pen Labeling: Mark each junction and pull box indicating source designation and circuit number(s) for the enclosed conductors.
- E. Engraved Nameplates: Provide nameplate for each new panelboard and enclosed circuit breaker. For circuit breakers, indicate load served.
- F. Panel-board Circuit Directories: At Completion of project, provide new circuit directory card, and accurately complete (typewritten format) the circuit directory card for each new panel-board and each existing panel-board where circuits were modified, added or deleted as part of this Project, so as to accurately reflect final conditions.

## 3.07 PIPE SLEEVES

- A. General: Pipe sleeves, for ALL conduit, shall be furnished and set by the Sub-Contractor and the Sub-Contractor shall be responsible for their proper and permanent location.
- B. Pipe sleeves: Pipe sleeves shall be installed and properly secured at ALL points where conduits pass through masonry, concrete or wood. Pipe sleeves shall be of sufficient diameter to provide approximately 1/2" clearance around the outside. Pipe sleeves through concrete floors shall be steel pipe and shall be installed 1" A.F.F. and shall be fire-stopped after conduit is installed.



## 3.08 FIRE ALARM INSTALLATION

- A. Installation shall be in accordance with the NEC, NFPA 72, local and state codes, as shown on the drawings, and as recommended by the major equipment manufacturer.
- B. All conduit, junction boxes, conduit supports and hangers shall be concealed in finished areas and may be exposed in unfinished areas. Smoke detectors shall not be installed prior to the system programming and test period. If construction is ongoing during this period, measures shall be taken to protect smoke detectors from contamination and physical damage.
- C. Duct Smoke Detectors: Comply with NFPA 72 and NFPA 90A. Install sampling tubes so they extend the full width of the duct.
  - 1. Photoelectric type, with sampling tube of design and dimensions as recommended by the manufacturer for the specific duct size and installation conditions where applied.
  - 2. Duct smoke detectors listed for use in the air distribution systems shall be located downstream of the air filters and ahead of the branch connections in the supply side of air systems of greater than 2000-cfm capacity.
  - 3. In air systems having a capacity of over 15,000-cfm, the duct smoke detectors shall be located in both the supply and return side of the system.
  - 4. In air system having a capacity of over 15,000-cfm and serving more than one story, an additional duct smoke detector shall be located at each story prior to the connection to a common return and prior to any circulation or fresh air inlet connection.
  - 5. Coordinate the location of remote test switches with the fire department. When directed to mount the remote test switches at the fire alarm control panel, the devices shall be installed in a cabinet similar to the fire alarm panel and LED's marking the location of the detector shall be mounted directly below the device. Mount remote test switches and LED's marking the location of the detector directly below the device in areas where detectors are accessible via ceiling tiles when directed to do so by the fire department. In areas where detectors are not accessible through ceiling tiles, the fire department shall dictate the location of remote test switches and LED's. The control panel shall enable the duct smoke detectors in the air handling systems to be tested from the panel.
- D. Wiring Installation:
  - 1. Wiring within Enclosures: Separate power-limited and non-power-limited conductors as recommended by manufacturer to match existing conventions. Install conductors parallel with or at right angles to sides and back of the enclosure. Bundle, lace, and train conductors to terminal points with no excess. Connect conductors that are terminated, spliced, or interrupted in any enclosure associated with the fire alarm system to terminal blocks. Mark each terminal according to the system's wiring diagrams. Make all connections with approved crimp-on terminal spade lugs, pressure-type terminal blocks, or plug connectors.
  - 2. Cable Taps: Use numbered terminal strips in junction, pull, and outlet boxes, cabinets, or equipment enclosures where circuit connections are made.
  - 3. Color-Coding: Color-code fire alarm conductors differently from the normal building power wiring. Use one color-code for alarm circuit wiring and a different color-code for supervisory circuits. Color-code audible alarm-indicating circuits differently from alarm-initiating circuits. Use different colors for visible alarm-indicating devices. Paint fire alarm system junction boxes and covers red.
  - 4. All wiring for the system shall be in accordance with Articles 760, 725, and 800 of the National Electrical Code and local electrical codes.
  - 5. Provide complete wiring and conduit between all equipment. All devices shall be mounted

upon and splices made in UL listed boxes. Wiring splices and transposing or changing of colors will not be permitted. Wiring shall be listed fire alarm cable in EMT conduit or listed Type MC fire alarm cable.

6. All junction boxes shall be painted red and labeled as 'Fire Alarm System' with decal or approved markings
7. Fire Alarm control systems and equipment shall be connected to separate dedicated branch circuits. Circuits shall be labeled 'FIRE ALARM'.

## **3.09 SAFETY SWITCH INSTALLATION**

- A. Manufacturer: Use only one manufacturer for all safety switches on the project.
- B. Type and ratings: Provide non-fused safety switches unless specifically noted fused and ratings as indicated. If ratings are not indicated, provide switch with ratings to suit the system voltage and load served.
- C. Enclosure Type: Provide NEMA-1 unless indicated otherwise. Provide NEMA-3R enclosures in exterior or damp locations, NEMA-4x enclosures in wet locations including kitchen areas and locations at grade in vicinity of vehicle traffic and other enclosure types as indicated or required to suit the application.
- D. Mounting: Mount safety switches where indicated and on wall or column adjacent to unit served or directly to unit or supporting framework, where applicable.
- E. Adjusting: Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.

## **3.10 GROUNDING**

- A. General: Provide all system and equipment grounding as indicated and as required by the NEC and local AHJ requirement.

## **3.11 FIRE STOP SYSTEM**

- A. Install firestop systems in accordance with UL approved design details and the manufacturer's instructions. Install sleeves, piping, conduits and cables with required clearance spaces, allowing installation of sealing materials. Do not exceed the outside diameter of the sleeve, conduit or cable by more than one inch or by less than 1/4 inch when making openings for penetrations. Install firestop systems so as to completely seal openings to prevent passage of smoke and water.

## **3.12 CHECKOUT, TESTING AND ADJUSTING**

- A. General: Checkout and perform all test procedures and adjustments required by the respective manufacturer's written instructions or recommendations, the Contract Documents, and/or deemed necessary by the Engineer to establish proper performance and installation of all electrical systems and equipment. After testing, correct any deficiencies, and replace materials and equipment shown to be defective or unable to perform at design or rated capacity.
  1. Re-test without additional cost to the Owner or Contract.
- B. Perform all testing in the presence of the Project Representative.
- C. Include product information in close-out manuals.

## 3.13 CLEANING AND TOUCH-UP PAINTING

- A. Perform cleaning as required by Division 1.
- B. General Cleaning: Periodically remove from the Project site, all waste, rubbish and construction debris accumulated from construction operations, and maintain order. The premises shall be left clean and free of any debris and unused construction materials, prior to Owner's acceptance.
- C. Electrical Equipment: Remove all dust, dirt, debris, mortar, wire scraps, rust and other foreign materials from the interior and exterior of all electrical equipment and enclosures, and wipe down. Clean accessible current carrying elements and insulators prior to energizing.
- D. Touch-Up Painting: Restore and refinish to original condition, all surfaces of electrical equipment scratched, marred and/or dented during shipping, handling or installation. Remove all rust and prime and paint as recommended by the manufacturer.

## 3.14 CLEANUP

- A. At completion of work included under this Section, clean, remove and cart away from premises all rubbish and accumulated materials and leave the work in a satisfactory condition.

**END OF SECTION**

## DIVISION 23 SPECIFICATIONS

## MECHANICAL

## PART 1 - GENERAL

### 1.01 GENERAL

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 01 - GENERAL REQUIREMENTS which are hereby made a part of this Section of the Specifications.
1. The Mechanical (General/Prime) Contractor is herein referred to as "MC" and is responsible for all Mechanical and Heating, Ventilating and Air Conditioning work. The MC has also been referred to as "HVAC Contractor", or the like, within these contract documents.
  2. The MC shall provide all items, articles, equipment, tools, appliances, materials and methods required for complete systems.
- B. Abbreviations:
1. GC:
    - a. The General (Mechanical) Contractor performing the general construction work of the Project. The GC is responsible for all work designated by GC.
  2. MC:
    - a. See above.
  3. PC:
    - a. The Plumbing Contractor (sub-contractor to the MC/GC) performing the plumbing work of the Project.
  4. TC:
    - a. The Temperature Control Contractor (Sub-Contractor to the MC/GC) performing the temperature control/sequence of operation work of the Project.
    - b. The TC has also been referred to as "BAS Contractor", or the like, within these contract documents.
    - c. All like titles shall mean "TC".
  5. EC:
    - a. The Electrical Contractor (sub-contractor to the MC/GC) performing the electrical work of the Project.
  6. The above abbreviations and definitions are not intended to define contracts and/or subcontracts but only as reference to where common Trade work is shown on the drawings or described in the specifications.
- C. Definitions:
1. Noted:
    - a. As indicated on drawings and/or specified.
  2. Indicated or Shown:
    - a. As indicated or shown on drawings.
  3. Concealed:
    - a. Embedded in masonry or other construction, installed behind wall furring, within partitions or hung ceilings (permanent or removable), in trenches, or in crawl spaces.
  4. Exposed:
    - a. Not installed underground or concealed.
  5. Piping:
    - a. Pipe, fittings, flanges, valves, controls, hangers, traps, drains, insulation and items necessary or required in connection with or relating thereto.

6. Wiring:
    - a. Conduits, fittings, wire, junction and outlet boxes, switches, cutouts, and receptacles and items necessary or required in connection with or relating thereto.
  7. Control wiring:
    - a. that wiring which is used for the logic control of systems and is generally 120 volts (AC or DC) or less. Such wiring methods are typically used by temperature control, communications and other automatic system.
  8. Power wiring:
    - a. that wiring which is used for other than logic control of systems and is generally 120 volts single phase and three phase AC. Such wiring methods are typically used for power and lighting system.
- D. Examine all Drawings and all other Sections of the Specifications for requirements therein affecting the work.
- E. The Contractor, Subcontractors, and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 01.
- F. The work of this Section is shown on drawings:
  1. M-000, MD-100, MD-101, M-100, M-101, M-500, E-100
- G. The work of this contractor includes the following Specifications:
  1. Division 00
  2. Division 01
  3. Section 23 00 05
  4. Section 26 00 05
- H. The Mechanical Contractor (MC) shall refer to all the Drawings enumerated in the List of Drawings in the title sheet for a full comprehension of the work to be done and for conditions affecting the location and placement of his/her equipment and materials. These Drawings are intended to be supplementary to the Specifications and any work indicated, mentioned, or implied in either is to be considered as specified by both. Should the character of the work herein contemplated or any matter pertaining thereto by not sufficiently explained in the Specifications or Drawings, the Mechanical Contractor may apply to the Architect-Engineer for further information and shall conform to such when given, as it may be consistent with the original intent. The Architect - Engineer reserves the right to make any reasonable changes in location prior to installation at no expense to the Owner. All lines are diagrammatic and exact locations are subject to the approval of the Architect-Engineer.

## **1.02 SUMMARY**

- A. Provide all labor, materials, tools, equipment, transportation and services necessary for and incidental to completion of all mechanical work as indicated on the Drawings and/or specified herein.
1. The scope of work consists of the installation of all materials to be furnished under Section 23 00 05, and without limiting the generality thereof, consists of furnishing all labor, materials, equipment, plant, transportation, rigging, staging, appurtenances, and services necessary and/or incidental to properly complete all work as shown on the Drawings, as described in the Specifications, or as reasonably inferred from either, in the opinion of the Architect-Engineer.

## 1.03 DESCRIPTION OF WORK

- A. **Work included:** Provide labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:
1. Selective demolition.
  2. Installation of condensers.
  3. Installation of refrigerant piping.
  4. Insulation of refrigerant piping.
  5. Concrete pad and bollards.
  6. Condensate piping and insulation.
  7. Equipment supports.
  8. Ductwork and insulation.
  9. Air handling units.
  10. Hydronic piping.
  11. Controls & Sequence of Operations
  12. Testing, Adjusting & Balancing.
  13. Cutting, patching and touch-up.
  14. Keeping the site clean.
  15. Coordination of sub-contractors.

## 1.04 DRAWING USE AND INTERPRETATION

- A. The drawings are diagrammatic and indicate the general arrangement of systems and equipment unless indicated otherwise by dimensions or details. Install work substantially as indicated. Exact equipment locations and raceway routing, etc. shall be governed by actual field conditions and/or instructions of the Architect/Engineer.

## 1.05 COMPLETE SYSTEMS

- A. General: Furnish and install all materials as required for complete systems, including all parts and labor obviously or reasonably incidental to a complete installation, whether specifically indicated or not. All systems shall be completely assembled, tested, adjusted and demonstrated to be fully operational, prior to Owner's acceptance.

## 1.06 CODES AND REGULATIONS

- A. Non-Compliance: Should any work be performed which is found not to comply with any of the above codes and regulations, provided all work and pay all costs necessary to correct the deficiencies.

## 1.07 REFERENCE STANDARDS

- A. Comply with the latest published standards of the following associations and organizations, where applicable, as minimum requirements:
1. Energy Conservation Code of Massachusetts
  2. Massachusetts Building and Mechanical Codes
  3. Local Codes

4. National Fire Protection Association (NFPA)
5. Public Health Service Regulations
6. Local Utility Standards & Regulations
7. American National Standards Institute (ANSI)
8. Certified Ballast Manufacturer (CBM)
9. Electrical Testing Laboratories (ETL)
10. Independent Testing Laboratories (ITL)
11. National Electrical Code (NEC) Latest Edition
12. National Electrical Manufacturers Association (NEMA)
13. Underwriters Laboratories (UL)
14. American Society for Testing & Materials (ASTM)
15. Insulated Power Cable Engineers Association (IPCEA)
16. Institute of Electrical and Electronic Engineers, Inc. (IEEE)

**1.08 QUALITY ASSURANCE**

- A. Manufacturers' Qualifications: Not less than (3) years experience in the actual production of the specified (or similar) products.
- B. Installers' Qualifications: Firm having not less than (5) years experience in the installation of mechanical systems and equipment similar in scope and complexity to those required for this Project, and having successfully completed at least ten comparable scale projects.
- C. Incidental Work: Painting, patching, welding, carpentry and the like related to or required for the work shall be performed by craftsmen skilled in the appropriate trade, and shall be provided for under Division 23, unless indicated otherwise.

**1.09 SUBMITTALS**

- A. General: Prepare and submit for approval, per the procedures set forth in Division 1, all submittals required by Division 1, this Section, and by all other Contract Documents for this Project.
- B. Number of Copies: As indicated in Division 1, or elsewhere in the Contract Documents, Electronic Format (PDF).
- C. Product Data: Submit for equipment, devices and materials to be used on the Project, as listed below. Product Data to consist of manufacturer's standard catalog cuts, descriptive literature and/or diagrams, in 8-1/2" x 11" format, and in sufficient detail so as to clearly indicate compliance with all specified requirements and applicable standards. Mark each copy to clearly indicate proposed product, included options, accessories, finish, size, type, etc. Submit all Product Data of the Project in a single submission initially. Submit Product Data for the following:
  1. Air handling units and condenser
  2. Refrigerant piping.
  3. Insulation.
  4. Controls.
  5. Condensate piping.
  6. Hydronic piping
  7. Equipment supports.



## 1.10 INSPECTIONS

- A. General: During and upon completion of the work, arrange and pay all associated costs for inspections of all mechanical work installed for the Project, in accordance with the Conditions of the Contract.
- B. Inspections Required: As per the laws and regulations of the local and/or state agencies having jurisdiction at the Project site.
- C. Inspection Agency: Approved by the local and/or state agencies having jurisdiction at the Project site.
- D. Certificates: Submit all required inspection certificates.
- B. Provide manufacturer's standard warranties on all specified items.

## 1.11 PERMITS

- A. The contractor shall obtain all required permits.

## 1.12 DRAWINGS & SPECIFICATIONS

- A. Intent:
  - 1. Provide all items and work indicated on the drawings and all items and work called for in the specifications in accordance with the Contract Documents. This includes all incidentals, equipment, appliances, services hoisting, scaffolding, supports, tools, supervision, labor, consumable items, fees, licenses, etc., necessary to provide complete and workable mechanical and plumbing systems.  
Perform start-up, commissioning and testing of each item and system to provide fully operable systems.
  - 2. Neither the specifications nor the drawings undertake to illustrate or describe all items necessary for the work; it is expected that, after review of the drawings and specifications, the Contractors shall be completely familiar with the function of all items included and that his bid shall reflect the inclusion of all hangers, racks, inserts, etc., necessary for a complete and operable system.
  - 3. Items of work shown on the drawings or called for in the specifications shall be furnished and installed as appearing on both drawings and specifications.
  - 4. When materials and equipment is provided by other trades or the Owner.  
The Contractors shall examine the Contract Documents to ascertain these requirements. Unless specifically indicated as being supplied or installed by others, all items of work shown on the drawings or indicated in the specifications shall be included by the Contractors in their bid.
  - 5. Unless indicated by specific dimensions, drawings are meant to be diagrammatic. Exact equipment locations and routing of piping, ductwork, conduit, wireway, cabletray, etc., shall be governed by field conditions and/or Owner's Representative's instructions.
  - 6. All dimensions which relate to the building shall be taken as construction progresses. All errors incurred as a result of the Contractors' failure to check or verify dimensions, measurements, etc., shall be corrected at the Contractors' expense.

7. The Contractors shall review the drawings for the work of other trades, informing the Owner's Representative of any conditions which obstruct, interfere with, or in any way prevent him from completing his work in a first class manner.
- B. Contractor's attention is directed to the fact that bidding documents may differ from the actual construction documents and/or the engineering drawings may differ from the architectural base drawings.
  1. Before commencing any construction work, the Contractors shall verify with the Owner's Representative that the Contractors' documents are the latest issued documents.

## **1.13 PROTECTION OF EQUIPMENT**

- A. The Contractors shall at his own expense protect his work, material and equipment as is liable to injury during the construction period. The Contractors shall be held responsible for all damages and theft until his work is fully and finally accepted.

## **1.14 OBSTACLES, INTERFERENCES & COORDINATION**

- A. The drawings show the general arrangement of equipment and accessories. Drawings do not indicate all offsets, fittings, accessories and changes in elevation which may be necessary. The Contractors shall make all changes in equipment, locations, etc., to accommodate the work and to avoid obstacles at no increase in remuneration. The Contractors shall provide offsets, fittings and accessories as may be required to meet such field conditions.
- B. Equipment shall be installed to avoid interferences with the operation, servicing and maintenance of equipment.

## **1.15 PRODUCTS**

- A. If products and materials are specified or indicated on the drawings for a specific item or system, those products or materials shall be used. If products and materials are not listed in either of the above, use first class products and materials, subject to approval of shop drawings.
- B. All products shall be new, clean, undamaged, and free of defects and corrosion.
- C. All products shall be shipped and stored in a manner which shall protect them from damage, weather and entry of debris. If items are damaged, they shall not be installed. The Contractor shall take immediate measures to obtain replacement or repair in order to maintain the schedule.
- D. The Contractor shall verify that all materials he or his suppliers select conform to the requirements of the drawings and specifications. Transmittal of drawing and specification information to manufacturers supplying materials, and adherence to these requirements is the Contractor's responsibility. Approval of a manufacturer's name by the Engineer does not release the Contractor of the responsibility for providing materials which comply in all respects with the requirements in the contract documents.

## 1.16 BASIS OF DESIGN

- A. The Basis of Design, as scheduled or identified on the contract documents, shall be considered to set the minimum standard for all respective equipment submittals.
  - 1. Substitutions to the Basis of Design shall meet, or exceed the performance scheduled or identified on the contract documents.
    - a. If no such performance has been scheduled or identified on the contract documents, the substituted product shall meet, or exceed the performance as published by the manufacturer of the Basis of Design.
  - 2. Substitutions to the Basis of Design shall be provided, at no additional cost to Owner, with all the standard features, trim, etc. as provided by the manufacturer of the Basis of Design.
  - 3. Non-standard options shall be provided as scheduled or identified on the contract documents at no additional cost to the Owner.

## 1.17 RECONSTRUCTION WORK

- A. The Contractor shall inspect the site and become familiar with the condition of the premises and the scope and character of work required. Additional compensation for adverse field conditions shall not be approved.
- B. The Contractor shall minimize interference with the working routine of occupied areas, by coordinating the performance of his work in a manner acceptable to all groups involved.
- C. The Contractor shall not interrupt any of the building's services in any way without the expressed permission of the Owner. Ample written notice of shutdowns shall be given well in advance to the Owner. Interruptions and interference shall be made as brief as possible and only at times as stated by the Owner. When temporary loss of services is unavoidable, it shall be made at times as shall cause the least interference with the established routine.
- D. The Contractor shall obtain the Owner's Representative's permission before utilizing any room or any other part of the building as a shop.

## 1.18 INSTALLATION

- A. All work described in these specifications or shown on the drawings and all work required by this Contract shall be executed in a thoroughly substantial and craftsmanlike manner by skilled mechanics in the various trades involved.  
Follow manufacturer's instructions for installing, connecting and adjusting all equipment.

## 1.19 SUPPORTS

- A. The Contractors shall furnish and install all necessary clamps, brackets, angles and all other items for the proper support of equipment whether indicated on drawings or not.
- B. All supports necessary for mounting and/or supporting equipment, fixtures, apparatus, etc., shall be of steel or similar material. Wood supports are not acceptable. Where used in corrosive environments, supports shall be suitably protected from corrosion.

## 1.20 ELEVATIONS

- A. The Contractor(s) who "owns" the equipment shall be responsible to set and check finish elevations or inverts. Prior to a Contractor(s) using any established bench mark, that Contractor(s) shall ascertain if that bench mark is in fact true and accurate.

## 1.21 ANCHOR BOLTS, SLEEVES, INSERTS AND OPENINGS

- A. The Contractors shall layout and install their work in advance of finish construction.
- B. The Contractors shall furnish all sleeves for passage of conduits through structural masonry and concrete walls, floors, roof and elsewhere as shall be required for the proper protection of each pipe and duct passing through building surfaces.
- C. The Contractors shall secure all large equipment items with high strength bolts, washers and locknuts. Embedded anchor bolts shall be drilled and set perpendicular to the face of the concrete. Use beveled washers to allow nuts to seat flush on bolts slightly out of perpendicularity. Level all equipment and machinery with wedges, shims and jack bolts and grout under the entire bearing surface.

## 1.22 PLACEMENT OF CONCRETE

- A. See Division 03 for information (if applicable).

## 1.23 CUTTING AND REPAIRING

- A. See Section 01 73 29 – CUTTING AND PATCHING.

## 1.24 EQUIPMENT LAYOUT

- A. Install all equipment to permit removal (without damage to other parts) of coils, fan shafts and wheels, filters, belt guards, sheaves, drives, motors, disconnects, etc. and all other parts requiring periodic replacement or maintenance.
- B. Provide access panels in equipment, ducts, etc., for inspection of interiors and for proper maintenance.
- C. Arrange equipment to permit access to valves, cocks, traps, starters, motors, control components and to clear the openings of swinging doors and access panels.
  - 1. The Contractors shall provide the Owner's Representative with all special tools needed for proper operation, adjustment and maintenance of equipment.

## 1.25 CLEANING

- A. The Contractors shall clean up and remove from the site all rubbish, debris and trash accumulated during the day as a result of Contractors' work or his presence on the job.
- B. Also see Section 01 74 19 – CONSTRUCTION & DEMOLITION WASTE MANAGEMENT

- C. Also see Section 01 77 00 – PROJECT CLOSEOUT PROCEDURES

## **1.26 ADMINISTRATION AND SUPERVISION**

- A. See Section 01 31 00 – PROJECT MANAGEMENT AND COORDINATION.

## **1.27 REGULATORY REQUIREMENTS**

- A. Comply with all applicable federal and state laws, and all local codes, by-laws and ordinances.
- B. Where provisions of the Contract Documents conflict with any codes, rules or regulations, the latter shall govern. Where the contract requirements are in excess of applicable codes, rules or regulations, the contract provisions shall govern unless the Designer rules otherwise.
- C. Request inspections from authorities having jurisdiction, obtain all permits and pay for all fees and inspection certificates as applicable and/or required. All permits and certificates shall be turned over to the Owner at the completion of the work. Copies of permits shall be given to the Owner prior to the start of work.
- D. Unless otherwise specified or indicated, materials and workmanship and equipment performance shall conform with the latest edition of the following standards, codes, specifications, requirements and regulations:
  - 1. State Building Code
  - 2. State Mechanical, Plumbing, Fire Protection and Electrical Codes
  - 3. National Fire Protection Association (NFPA)
  - 4. Local Town Regulations and By-laws
  - 5. Underwriter's Laboratories, Inc. (UL)
  - 6. National Electrical Manufacturer's Association (NEMA)
  - 7. American National Standards Institute (ANSI)
  - 8. All work shall meet or exceed any other state and local codes and/or authorities having jurisdiction including all other standards indicated herein.

## **1.28 VISIT TO SITE**

- A. Before estimating work, visit the project site and verify all measurements and field conditions affecting the work. The contractor is fully responsible for the correctness of all measurements and for any connections to existing work. Submission of bid is considered evidence that this contractor has visited and examined the site. No consideration, claims, charges, or compensation will be granted for extra work as a result of the contractor's failure to visit the site or verify conditions and measurements.

## **1.29 SURVEYS AND MEASUREMENTS**

- A. Base all required measurements, both horizontal and vertical, on reference points established by the General Contractor and be responsible for the correct laying out of the mechanical work. In the event of a discrepancy between actual measurements and those indicated, notify the General Contractor in writing, and do not proceed with the work required until written instructions have been issued by the General Contractor.

- B. The Contractor is solely responsible for verifying field measurements, conditions, and drawing and specifications information (for all trades) before ordering materials and equipment and before commencing work. The Contractor is solely responsible for verifying shop drawings (including shop drawings of other trades) before releasing related materials and equipment and before rough in. No consideration, claims, charges, or compensation will be granted due to any differences between the actual dimensions and any dimensions indicated on the drawings.
- C. Report any apparent discrepancies or conflicts found at once to the Architect- Engineer for consideration and wait for a decision before proceeding with any work in the affected area.
- D. The Architect-Engineer's decisions in cases of discrepancies, conflicts, and related to verification of measurements and conditions are final and binding upon the contractor, make all installation accordingly.

**1.30 EXISTING CONDITIONS AND UTILITIES**

- A. Information and data indicated on the drawings regarding existing conditions (including underground utilities) is from the best available sources. However, no assurance is made as to completeness and/or accuracy.
- B. Contact all utility companies operating in the project vicinity (water, gas, sewage, electric, telephone, cable television, etc.) and the owner's maintenance department (where applicable) and verify all existing underground systems before any excavation commences.

**1.31 ITEMS NOT SHOWN OR SPECIFIED**

- A. Provide any items of material not indicated on the drawings and/or not specified, but which are required for the complete and proper installation and/or operation of any part of the work, as if indicated and specified.
- B. Provide any work not indicated on the drawings and/or not specified, but which is required for compliance with applicable codes and regulations, as if indicated and specified.
- C. No consideration, claims, charges, or compensation will be granted for performing work required for complete and proper installation/operation or required for compliance with applicable codes and regulations.

**1.32 COORDINATION**

- A. Drawings are diagrammatic. They indicate general arrangements of systems and other work. They do not show all offsets required for coordination nor do they show the exact routings and locations needed to coordinate with structure and other trades and to meet Architectural requirements.
- B. Work shall be performed in cooperation with other trades on the project and so scheduled as to allow speedy and efficient completion of the work.
- C. In all spaces, prior to installation of visible material and equipment, including access panels, review Architectural Drawings for exact locations and where not definitely indicated, request information from Designer. Where the work shall interfere with the work of other trades, assist in working out the space conditions to make satisfactory adjustments before installation.

Without extra cost to the Owner, make reasonable modifications to the work as required by normal structural interferences. Pay the General Contractor for additional openings, or relocating and/or enlarging existing openings through concrete floors, walls, beams and roof required for any work which was not properly coordinated. Maintain maximum headroom at all locations. All piping, duct, conduit, and associated components to be as tight to underside of structure as possible.

- D. If any work has been installed before coordination with other trades so as to cause interference with the work of such trades, all necessary adjustments and corrections shall be made by the Contractor(s) involved without extra cost to the Owner.
- E. Where conflicts or potential conflicts exist and engineering guidance is desired, submit sketch of proposed resolution to Designer for review and approval.
- F. Protect all materials and work of other trades from damage which may be caused by the work, and repair all damages without extra cost to the Owner.

### **1.33 TYPICAL DETAILS**

- A. Typical details where shown on the drawings shall apply to each and every item of the project where such items are applicable. They are not repeated in full on the drawings, which in many cases are diagrammatic only, but with the intention that such details shall be incorporated in full. Any alternate method proposed for use by the Contractor shall have the prior approval of the Designer.

### **1.34 ACCESSIBILITY**

- A. Install all work such that parts requiring periodic inspection, operation, maintenance and repair are readily accessible.
- B. Furnish all access panels appropriate to particular conditions, to be installed by trades having responsibility for the construction of actual walls, floors or ceilings at required locations.

### **1.35 SUPPLEMENTAL SUPPORTING STEEL**

- A. Provide all supplementary steelwork required for mounting or supporting equipment and materials.
- B. Steelwork shall be firmly connected to building construction.
- C. Steelwork shall be of sufficient strength to allow only minimum deflection in conformity with manufacturer's published requirements.
- D. All supplementary steelwork shall be installed in a neat and workmanlike manner parallel to floor, wall and ceiling construction; all turns shall be made at forty-five and ninety degrees, and/or as dictated by construction and installation conditions.

- E. All manufactured steel parts and fittings shall be galvanized.

**1.36 TOOLS AND EQUIPMENT**

- A. Provide all tools and equipment required for the fabrication and installation of the mechanical and electrical equipment at the site.

**1.37 PORTABLE AND DETACHABLE PARTS**

- A. Contractors shall retain in their possession all portable and/or detachable parts and portions of materials, devices, equipment etc. necessary for the proper operation and maintenance of the mechanical and electrical systems until final completion of the work, at which time they shall be handed over to the Owner.

**1.38 GUARANTEE/WARRANTY**

- A. Guarantee Work of this Section in writing for one year following the date of beneficial occupancy by the Owner. The guarantee shall repair or replace defective materials, equipment, workmanship and installation that develop within this period, promptly and to Owner's satisfaction and correct damage caused in making necessary repairs and replacements under guarantee within Contract Price.
- B. In addition to guarantee requirements of Division 01 and of Subparagraph A above, obtain written equipment and material warranties offered in manufacturer's published data without exclusion or limitation, in Owner's name.
  - 1. Upon receipt of notice from the Owner of failure of any part of the systems or equipment during the warranty period, the affected part or parts shall be replaced by this Contractor without any reimbursement.
  - 2. At nine months into the one-year guarantee period, the contractor shall perform a 100% test of all installed equipment. Any device and/or part found to be defective shall be repaired and/or replaced at no cost to the Owner. The Contractor shall notify the fire department one month in advance of the 100% test.
  - 3. Replace material and equipment that require excessive service during guarantee period as defined and as directed by Designer.
  - 4. Provide 24 hour service beginning on the date the project is accepted by the Owner, whether or not fully occupied, and lasting until the termination of the guarantee period. Service shall be at no cost to the Owner. Service can be provided by this contractor or a separate service organization. Choice of service organization shall be subject to the Owner's approval. Submit name and a phone number that will be answered on a 24-hour basis each day of the week, for the duration of the service.
  - 5. Submit copies of equipment and material warranties to the Owner before final payment.
  - 6. At end of guarantee period, transfer manufacturers' equipment and material warranties still in force to the Owner.
  - 7. This Paragraph shall not be interpreted to limit the Owner's rights under applicable codes and laws and under this Contract.
  - 8. Other Sections of this Specification may specify warranty requirements that exceed those of this Paragraph. Those paragraphs will govern.
  - 9. Use of systems provided under this Section for temporary services and facilities shall not constitute Final Acceptance of work by the Owner, and shall not initiate the guarantee period.



10. Non-durable items, such as electric lamps, shall be replaced up to the date of acceptance, such that they shall have had no more than 100 hours use prior to this date.
11. Provide manufacturer's engineering and technical staff at site to analyze and rectify problems that develop during guarantee period immediately. If problems cannot be rectified immediately to the Owner's satisfaction, advise the Owner in writing, describe efforts to rectify situation, and provide analysis of cause of problem. Designer will direct course of action.

**1.39 OPERATING, INSTRUCTION AND MAINTENANCE MANUALS**

A. Refer to SECTION 01 78 39 – PROJECT RECORD DRAWINGS for information.

In addition to requirements of 01 78 39, Contractor shall provide manuals as follows:

1. Each copy of the approved operating and maintenance manual shall contain copies of approved shop drawings, equipment literature, cuts, bulletins, details, equipment and engineering data sheets and typewritten instructions relative to the care and maintenance for the operation of the equipment, all properly indexed. Each manual shall have the following minimum contents:
  - a. TABLE OF CONTENTS
    - i. Introduction
      - 1.) Explanation of manual and its purpose and use.
      - 2.) Description of the mechanical systems.
      - 3.) Safety precautions necessary for equipment.
      - 4.) Illustrations, schematics and diagrams.
      - 5.) Installation drawing.
    - ii. Maintenance
      - 1.) Maintenance and lubricating instructions.
      - 2.) Replacement charts.
      - 3.) Trouble shooting charts for equipment components.
      - 4.) Testing instructions for each typical component.
      - 5.) Two typed sets of instructions for ordering spare parts.  
Each set shall include name, price, telephone number and address of where they may be obtained.
    - iii. Manufacturer's Literature
      - 1.) The equipment for which shop drawings have been submitted and approved.

**1.40 OPERATING INSTRUCTIONS**

A. Refer to SECTION 01 78 39 – PROJECT RECORD DRAWINGS for information.

In addition to requirements of 01 78 39, Contractor shall:

1. Upon completion of his work, the Contractor shall instruct the Owner or his Representative in the complete operating and maintenance procedures and requirements of all equipment, materials and systems installed as part of this Contract.
2. Four (4) complete, bound sets of operating and maintenance instructions shall be supplied to the Owner's Representative for all systems.  
Instructions shall include cuts of the various items, including technical data for same, manufacturer's literature and maintenance instructions.

**1.41 RECORD DOCUMENTS**

A. Refer to SECTION 01 78 39 – PROJECT RECORD DRAWINGS for information.

In addition to requirements of 01 78 39, Contractor shall provide documents as follows:

1. The following record documents must be submitted to the Owner's Representative.
  - a. Approved shop drawings and product data submittals.
  - b. Operating and maintenance instructions for all systems.
  - c. Written guarantee.
  - d. Record drawings ("As Builts").
    - i. The Owner's Representative shall supply the Contractor with AutoCAD background floor plans.
    - ii. It shall be the Contractor's responsibility to note, as their work progresses, all deviations and changes therefrom.
    - iii. At the end of the project all deviations and changes shall be transferred to AutoCAD. Contractors shall furnish "As-Built" to the Owner's Representative.
    - iv. The Contractor shall note all changes necessitated by field conditions, change order, etc., at the completion of his portion of the work.
  - e. Copy of valve schedules.
  - f. Check, Test, and Start-up Service Reports addressed to and in favor of Owner where equipment is specified for this procedure.
  - g. Receipts signed by Owner indicating Owner's receipt of any spare parts or equipment such as belts, valves, fuses, etc., required by other sections of this division to be furnished by the Contractor and turned over to the Owner.
  - h. Four (4) sets of hard copies and two (2) electronic copies of the above record documents must be submitted to the Owner's Representative; three of the sets will be forwarded to the Owner and the Owner's Representative will retain one copy. Record documents shall be arranged in the following manner:
    - i. Each set to be inserted in hard cover three ring binder(s). Each set must include one of each item required in Part. A.
    - j. Items in the binder(s) are to be separated using 8 1/2" x 11" index dividers with plastic insertable tabs. Tabs to be labeled as required to identify each item in binder.
    - k. Cover sheet in each binder indicating the following:
      - i. Date
      - ii. Project title and number
      - iii. Owner's name and address
      - iv. Contractor's name and address
      - v. Engineer's name and address
      - vi. Table of Contents listing contents of each section in the binder(s).
    - l. All drawings to be inserted in pockets in the binder(s). Stapled sets of drawings will not be required to be inserted in binder pockets, but should be submitted with binder(s) and noted in Table of Contents.

**1.42 QUALITY ASSURANCE**

A. See Section 01 45 00 – QUALITY CONTROL

**1.43 DELIVERY, STORAGE AND HANDLING**

- A. All materials for the work of this section shall be delivered, stored and handled so as to preclude damage of any nature. Manufactured materials shall be delivered and stored in their original containers, plainly marked with the products' and manufacturer's name. Materials in broken containers or in packages showing watermarks or other evidence of damage, shall not be used and shall be removed from the site.

**PART 2 - PRODUCTS****2.01 PIPE & FITTINGS****A. General**

1. Reference is made to specifications of recognized authorities to establish quality. Latest editions of their publications at time of bidding shall be in force.
  - a. Piping and fittings shall conform to the latest ANSI, ASTM, and NFPA and AWWA Standards including latest amendments and shall be in conformance with state and local plumbing codes, material standards.
  - b. Each length of pipe, each pipe fitting, trap, materials and/or device used in the respective system shall have cast, stamped or indelibly marked on it, the maker's name or mark, weight and quality of the product when such marking is required by the approved standard that applies.
2. All threads for screwed joints shall be National Taper Pipe Thread conforming to ANSI B2.1-1968.
3. Qualify welding procedures, welders and operators in accordance with ASME B31.1, or ASME B31.9, as applicable, for shop and project site welding of piping work.

**B. Copper Tube and Fittings:**

1. Hydronic piping: drawn temper: ASTM B 88, type L solder filler metals: ASTM B 32, 95-5 tin-antimony, for heating hot water piping. All components of the hydronic piping systems shall be scheduled and rated for minimum working pressure of 150-psi and a maximum working temperature of 230F.
2. Copper Tube: ASTM B88; Type as indicated for each service; hard-drawn temper for water piping; soft temper for oil piping.
3. Wrought-Copper Fittings: ASME B16.22.
  - a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - i. Anvil International, Inc.
    - ii. S. P. Fittings; a division of Star Pipe Products.
    - ii. Victaulic Company.
    - iv. Or equal
4. Cast-Bronze Threaded Fittings: ANSI B16.15.
5. Wrought-Copper Unions: ASME B16.22.

**C. Joining Materials:**

1. ASME B16.21, nonmetallic, flat, asbestos free, 1/8-inch maximum thickness unless thickness or specific material is indicated.
2. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
3. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.
4. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.

5. Soldering Materials: Except as otherwise indicated, provide soldering materials as determined by Installer to comply with installation requirements.
6. Brazing Materials: Except as otherwise indicated, provide brazing materials as determined by Installer to comply with installation requirements. Comply with SFA-5.8, Section II, ASME Boiler and Pressure Vessel Code for brazing filler metal materials.
7. Welding Filler Metals: Comply with AWS D10.12/D10.12M for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.
8. Gaskets for Flanged Joints: ANSI B16.21; full-faced for cast-iron flanges; raised face for steel flanges, unless otherwise indicated.

**D. Refrigerant Piping:**

1. All refrigerant piping shall be installed in accordance with manufacturer's guidelines.
2. Brazing shall be performed using inert gas to prevent the oxidation of copper inside of the tubing.
3. Refrigerant line dryers shall be installed in both liquid lines. Dryers to be sized for the capacity of the units.
4. Contractor shall verify refrigerant piping sizes required based on actual installed lengths with manufacturer of equipment being installed. Oversize equipment/refrigerant piping as recommended by the manufacturer to meet required capacities.
5. Materials:
  - a. Copper Tube: ASTM B 88, Type K or L ASTM B 280, Type ACR.
  - b. Wrought-Copper Fittings: ASME B16.22.
  - c. Wrought-Copper Unions: ASME B16.22.
  - d. Solder Filler Metals: ASTM B 32. Use 95-5 tin antimony or alloy HB solder to join copper socket fittings on copper pipe.
  - e. Brazing Filler Metals: AWS A5.8.

**E. Condensate Piping:**

1. Aboveground condensate water piping (from air-conditioning equipment), NPS 2 and smaller, shall be one of the following:
  - a. Polyvinyl chloride (PVC) plastic pipe compliant with ASTM D1785.

**2.02 PIPING ACCESSORIES**

- A. Pipe Sleeves: Standard IPS steel sleeves shall be provided wherever exposed pipes pass through masonry walls or partitions. Pipe sleeves are to be two pipe sizes larger than line size. Insulated piping sleeves shall be sized to allow insulation to pass through the sleeve without gouging.
- B. Unions: ANSI BL 6.39 malleable-iron, class 150, hexagonal stock with ball-and socket joints, metal-to-metal bronze seating surfaces; female threaded ends, threads shall conform to ANSI BL 20.1. Flanged unions for welded pipe shall be weld neck, 150 lb. raised face. Flanged joints shall be packed with impregnated asbestos gaskets placed inside the bolt circle with graphite applied to both faces.
- C. Dielectric Fittings: threaded end or sweated connections for the pipe materials in which installed; constructed to isolate dissimilar metals, prevent galvanic action and prevent corrosion. The dielectric unions shall meet the requirements for tensile strength of pipe fittings in accordance with Federal Specification WW-U-531 and shall be suitable for temperatures and pressures encountered. The ends shall be threaded, flanged, brazed, or soldered to match adjacent piping. The metal parts of the union shall be separated so that the electrical current is below 1 percent of the galvanic current which would exist with metal to metal contact.

- D. Air Vents: install automatic air vents at high points in the hot water piping system and elsewhere as required for the system air venting.
  - 1. Replace all existing air vents at fin-tube radiation.
- E. Strainers: Strainers shall be manufactured by Illinois, Barnes and Jones, Armstrong or equal.
  - 1. Y-Pattern Strainers: 250-psig working steam pressure; ASTM A 126, Class B cast-iron body; stainless-steel screen, No. 20 mesh for NPS 2 and smaller and manufacturer's recommended perforations for NPS 2-1/2 and larger; tapped blowoff plug. Threaded connections for strainers NPS 2 and smaller; flanged connections for strainers NPS 2-1/2 (DN 65) and larger.
  - 2. Basket Strainers: 250-psig working steam pressure; ASTM A 126, Class B cast-iron body; stainless-steel screen; bolted cover; threaded connections for strainers NPS 2 and smaller and flanged connections for strainers NPS 2-1/2 and larger.
- F. Thermometers: Thermometers in piping shall be industrial grade, vari-angle with 3-1/2" stem similar to Weiss 7VU35, Ashcroft, Terrice or approved equal
  - 1. Case: Modern V-shape design with parts molded of polyester in black textured finish with heavy glass protected front firmly secured against rattles by spring action.
  - 2. Provide adjustable case locknut and angle adjusting screw work independently to provide a full 360° psi
  - 3. Precision made to guarantee accuracy within 1% of scale range.
  - 4. Silicone shock mounted for lasting durability.
  - 5. Scale: White coated aluminum with permanently baked bold black markings. Locked in place and adjusted through device at top of scale. There are no mounting screws to cover up scale markings.
  - 6. Range: -40°F to 300°F
- G. Gauges: Shall have the proper graduation for the service. Dials shall be clearly labeled to indicate measured units (psi, feet of water, etc.). Equip all gauges on suction and discharge side of water pumps with snubbers. Ranges on gauges shall be selected so that operating pressures can be read at mid-range of the gauge.
  - 1. Shall be Weiss #PSN- B, Ashcroft, Terrice or approved equal.
  - 2. Gauges shall have cast aluminum cases with chrome plated rings and shall have non-corrodible stainless steel movements of the silver brazed bourdon type. Gauges shall be equipped with a recalibration setting screw located in face of gauge. Accuracy shall be within 1 1/2-percent. Each gauge shall be connected to a point where it is desired to measure the pressure.
  - 3. The pipes to each gauge shall be provided with valve at gauge. All steam gauges shall have syphons. Gauges shall be properly supported. Shall be Weiss #4PGA or approved equal by Terrice or Ashcroft.

### **2.03 HYDRONIC PIPING VALVES**

- A. Pipe Sleeves: Standard IPS steel sleeves shall be provided wherever exposed pipes pass through masonry walls or partitions. Pipe sleeves are to be two pipe sizes larger than line size. Insulated piping sleeves shall be sized to allow insulation to pass through the sleeve without gouging.

### **2.04 HYDRONIC PIPING INSULATION**

- A. All valves shall be of the same make except as noted below for special valves and shall be Crane, Watts, Walworth, Tour & Anderson, or equal manufacture based on the following Stockham valves.

- B. All water valves installed in copper tube piping shall be, in general, solder end pattern, all bronze with lever handle, rated for not less than 200 pounds non-shock water pressure. In general, all line service valves are to be ball valves, manual vents are to be globe type.
- C. Solder end valves are as follows:
  - 1. Gate valves - Stockham figure b-109.
  - 2. Globe valves - Stockham b-14t.
  - 3. Check valves - Stockham b-309.
  - 4. Drain valves - Watts no. B-6000 ball valve with hose adapter, cap and chain.
  - 5. Ball valves - Watts series b-6001-ss-xh.
- D. Screw end and flanged valves shall be as follows:
  - 1. Gate: 2-1/2 in. And smaller - Stockham figure b-120; 3 in. And larger – Stockham Figure g-620 or g-623.
  - 2. Globe: 2-1/2 in. And smaller - Stockham figure b-120 or 752; 3 in. And larger – Stockham figure g-609 or g-613.
  - 3. Check: 2-1/2 in. And smaller - Stockham figure b-319; 3 in. And larger – Stockham figure g-931.
  - 4. Ball valves: watts series 600-ss-sh.
- E. All shut-off valves 2-1/2 in. And larger shall be watts series g-4000, cast iron body, 316, steel disc and shaft, nodel ept seat, designed for bubbletight shutoff. Valves to be fitted with lever operator for two position operation.
- F. Gate and/or globe valves shall not be used as substitutes for the following valves when used as balance valves.
- G. For 2 in. And smaller - balancing valves shall be semi-steel body, bronze plug with neoprene or teflon resilient face, bronze top and bottom bushings, complete with lever. Provide open position stop and plastic cap on all valves which are labeled "balance valves" on the drawings.
- H. Pump discharge check valves shall be Muessco, Williams & Hager, or Smolensky equal to Muessco 105-dt silent type, steel body, stainless steel trim and spring, renewable seat, 150psig ASME rated.
- I. Ball Valves: provide 2-piece valve with full-port opening, threaded ends, blow-out proof stem, hard chrome plated forged brass vented ball. Adjustable packing nut, rated not less than 600# w.o.g, 150 w.s.p.
  - 1. Standard: MSS SP-110.
  - 2. SWP Rating: 150 psig.
  - 3. CWP Rating: 600 psig.
  - 4. Body Design: Two piece.
  - 5. Body Material: Bronze.
  - 6. Ends: Threaded.
  - 7. Seats: PTFE or TFE.
  - 8. Stem: Stainless steel.
  - 9. Ball: Stainless steel, vented.
  - 10. Port: Full.
- J. Bronze, Calibrated-Orifice, Balancing Valves:
  - 1. Body: Bronze, ball or plug type with calibrated orifice or venturi.
  - 2. Ball: Brass or stainless steel.
  - 3. Plug: Resin.
  - 4. Seat: PTFE.
  - 5. End Connections: Threaded or socket.
  - 6. Pressure Gage Connections: Integral seals for portable differential pressure meter.

7. Handle Style: Lever, with memory stop to retain set position.
8. CWP Rating: Minimum 125 psig.
9. Maximum Operating Temperature: 250 deg F.

**2.05 REFRIGERANT PIPING INSULATION**

- A. Insulation Materials:
  1. Flexible Elastomeric Insulation: Closed-cell, sponge or expanded rubber materials. Comply with ASTM C 534, Type I for tubular materials.
  2. Exterior piping shall be provided with aluminum outer jacket.
- B. Adhesives:
  1. Flexible Elastomeric and Polyolefin Adhesive: Comply with MIL-A-24179A, Type II, Class I.
    - a. For indoor applications, adhesives shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- C. Install exterior and interior piping concealed within PVC line cover kit.
  1. Provide all required end caps and fittings.

**2.06 PIPING INSULATION MATERIALS**

- A. Comply with requirements in "Piping Insulation Schedule, General," article for where insulating materials shall be applied.
- B. Products shall not contain asbestos, lead, mercury, or mercury compounds.
- A. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.
- B. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.
- C. Mineral-Fiber Blanket Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 553, Type II and ASTM C 1290, Type I. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.
- D. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
  1. Johns Manville
  2. Knauf Insulation
  3. Owens Corning
  4. Or equal

**2.07 PIPING HANGERS AND SUPPORTS**

- A. Hangers shall be as manufactured by Grinnell Company, Carpenter & Paterson, Fee & Mason, or equal.
- B. For all pipe 2-1/2" and larger - Grinnell Figure No. 20, at 10' intervals.
- C. For all other suspended piping - Grinnell Figure 70 at 6' intervals for tubing 1-1/4" or less, 10' intervals for piping at 1-1/2" and larger.

- D. All hangers directly in contact with non-ferrous pipe or tubing shall be copper plated or plastic coated.
- E. Hangers or supports shall be placed within 1' of each horizontal elbow. Vertical runs of pipe not over 5' in length shall be supported on hangers placed not over 12" from the elbow on the connecting horizontal run.
- F. Install Figure 167 insulation shield between hanger and insulation on all piping; hangers to be installed outside pipe insulation.
- G. Vertical risers shall be supported with Grinnell Figure CT-121C plastic coated riser clamp; to be installed immediately below a coupling.

**2.08 METAL DUCTWORK**

- A. HVAC ducts and casings. Per SMACNA, galvanized G90 sheet metal as default standard. No gauge less than 24, no pressure class less than 2.0" w.g. Higher pressures and different materials (e.g. Aluminum, stainless steel), as suitable to the installation and application.
  - 1. Provide sheet metal in thicknesses indicated, packaged and marked as specified in ASTM A 700.
- B. Galvanized sheet steel: lock-forming quality, ASTM a 527, coating designation g 60.
- C. Unless otherwise indicated, provide galvanized steel reinforcing where installed on galvanized sheet metal ducts.
- D. Tie rods: galvanized steel, 1/4-inch minimum diameter for 36-inch length or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

**2.09 DUCTWORK SEALING MATERIALS**

- A. The term sealant used here is not limited to materials of adhesive or mastic nature, but also includes tapes and combinations of open weave fabric strips, mastics and silicones.
- B. Joint and seam tape: 2 inches wide, glass-fiber-fabric-reinforced. Tapes used to seal ductwork shall be listed and labeled in accordance with UL 181a or UL 181b.
  - 1. Unlisted duct tape is not permitted as a sealant on any metal ducts.
- C. Woven-fiber tape impregnated with a gypsum mineral compound and a modified acrylic/silicone activator to react exothermically with the tape to form a hard, durable, airtight seal.
- D. Joint and seam sealant: one-part, nonsag, solvent-release-curing, polymerized butyl sealant complying with fs tt-s-001657, type 1; Formulated with a minimum of 75 percent solids.
- E. Flanged joint mastics: one-part, acid-curing, silicone elastomeric joint sealants, complying with ASTM c 920, type s, grade ns, class 25, use 0.



## 2.10 DUCT FABRICATION

- A. Except as otherwise indicated, fabricate rectangular ducts with galvanized sheet steel, in accordance with SMACNA "HVAC duct construction standards," tables 1-3 through 1-20, including their associated details.
  1. Conform to the requirements in the referenced standard for metal thickness, reinforcing types and intervals, tie rod applications, and joint types and intervals.
  2. Fabricate rectangular ducts in lengths appropriate to reinforcement and rigidity class required for pressure classification.
  3. Provide materials that are free from visual imperfections such as pitting, seam marks, roller marks, stains, and discolorations.
- B. Construct and seal galvanized steel ductwork in accordance with the schedule as listed below:
 

1.	Rectangular duct	<u>inches</u>	<u>US gage</u>
	Greatest dimension	to 30"	24
		31" - 60"	24
2.	Round Duct	<u>Inches</u>	<u>US gage</u>
	Diameter	to 8"	24
		9" - 24"	22
3.	Air system	SMACNA Duct	SMACNA
		<u>Pressure Class</u>	<u>Seal Class</u>
	Low pressure ducts	+ 2" w. g.	A
	Exhaust air ducts	-2" w.g.	A

## 2.11 DUCTWORK ACCESSORIES

- A. Instrument test holes: cast iron or cast aluminum to suit duct material, including screw cap and gasket and a flat mounting gasket. Size to allow insertion of pitot tube and other testing instruments and provide in length to suit duct insulation thickness.
- B. Bell-mouth (radius) fittings: for connection to sheet metal duct, incorporating deformed locking groove with adjustable damper using spring loaded retractable bearing and positive locking regulator.
- C. Flexible duct clamps: stainless steel band with cadmium-plated hex screw to tighten band with a worm-gear action. Provide in sizes from 3 to 18 inches to suit duct size.
- D. Adhesives: high strength, quick setting, neoprene based, waterproof and resistant to gasoline and grease.

## 2.12 DUCT INSULATION

- A. Acceptable manufacturers subject to compliance with the specifications, manufacturers include, but are not limited to the following: Manville, Certain- Teed, Knauf, Owens-Corning.
- B. Materials:
  1. Insulating materials as described herein are of manufacturers as noted in description.
    - a. Type: Manville r-series microlite with fsk facing, vsk vapor barrier tape, permtape by Compact Corporation.
- C. Furnish and install R-6 insulation to all supply ductwork.

- D. Fire safety: Insulating materials as described herein or equal materials shall meet fire and smoke hazard classification ratings on a composite basis in accordance with NFPA 90a and 90b standards and FHA, as tested by UL per ASTM E-84.

**2.13 FIRE STOPPING**

- A. Fire-resistant sealant: provide one-part elastomeric sealant formulated for use in a through-penetration fire-stop system for filling openings around duct penetrations through walls and roof, having fire-resistance ratings indicated as established by testing identical assemblies per ASTM E 814 by Underwriters Laboratory, Inc. or other testing and inspecting agency acceptable to authorities having jurisdiction.

**2.14 AIR HANDLING UNIT (AHU-X)**

- A. System Description:
1. The product shall consist of horizontal and vertical air handling units and mixing boxes. Units shall be tested and certified with AHRI 430 and tested in accordance with AHRI 260. The unit shall comply with NFPA 90A and shall be UL tested to U.S. and Canadian safety standards.
  2. Air handlers shall consist of a hydronic and/or DX coil, drain pan, and centrifugal fan with motor
  3. mounted in a common cabinet. Coil connections shall be independent for the same or opposite side
  4. Unit and accessories shall be insulated with 1-inch, 1-1/2 lb/ft<sup>3</sup> density fiberglass insulation.
  5. Large motor access panels shall be provided on both sides of the unit and accessories for vertical models BCVE 72-120. Vertical models BCVE size 72-120 ship in two pieces.
- B. Casings:
1. Casings (structural components) shall be constructed of heavy-gauge galvanized steel, insulated with one-inch, 1-1/2 lb density fiberglass fire resistant and odorless glass fiber material to provide thermal and acoustical insulation.
  2. Fan housing sides shall be directly attached to the air handler top and bottom panels strengthening the entire unit assembly. Coil access panels shall be located on the sides of BCHE/BCVE size 72-120 air handlers and allow easy removal of the internal coils and drain pan.
  3. Coil access shall be located on the front of the BCVE size 24-60 model. Main access panels provide generous access to the fan and motor from the side of the BCHE/BCVE size 72-120 air handler, and the front of the BCVE size 24-60 unit.
- C. Hydronic Coils:
1. Heating coils shall be two-row hot water. Heating coils shall be available factory-installed in the preheat or reheat position. All hydronic coils shall be 12 fins per inch, with 0.012 inch wall thickness. All hydronic coils use highly efficient aluminum fins, mechanically bonded to seamless copper tubes. All coils shall be specifically designed and circuited for water use.
  2. All coils shall be factory tested with 450 psi air under water. Maximum standard operating conditions shall be: 300 psig, 200°F. Sweat type connections shall be standard. Coil performance data shall be in accordance with the current edition of AHRI Standard 410.

**D. Direct Expansion (DX) Coils:**

1. DX coils use refrigerant 410A, have 3/8" OD internally grooved, round seamless copper tubes
2. expanded into full fin collars for permanent fin-tube bond. Three-, four-, and six-row DX coils use highly efficient aluminum fins mechanically bonded to stainless copper tubes with 12 fins per inch fin spacing.
3. The coil casing shall be 16-gauge galvanized steel. A foam sealing strip between the casing (top and bottom) channels and fins helps eliminate air bypass and reduce potential water carryover. Coils
4. have round, seamless, copper pipe liquid lines and suction headers with male sweat connections.
5. Suction headers have bottom connections to aid drainage of any oil that may collect in the coil.
6. Liquid line and suction connections shall be outside the unit casing (on the same side of the unit) to facilitate field piping. Connections shall be clearly labeled to ensure coils shall be piped correctly. Coils have a venturi-type distributor assembly designed with a vertical downflow feed for low pressure drops.
7. Coils shall be proof tested at 715 psig and leak tested at 650 psig air-under-water. Coils shall be dehydrated and sealed with a dry air charge. Maximum standard operating conditions shall be 650 psig at 127°F with R-410A. Coil performance data shall be in accordance with the current edition of AHRI Standard 410.

**E. Fan:**

1. The fans shall be DWDI (double width double inlet) forward curved centrifugal blower type. The fans shall be direct drive mounted directly to the motor shaft. All fans shall be dynamically balanced. All air handlers have a single fan.

**F. EC Motors:**

1. A 50/60 Hertz, variable speed, multiple voltage EC motor has a plus or minus 10 percent voltage utilization range. The motor shall be open type with permanently sealed ball bearings, internal overload protection, and uses a radial mount. The motor shall be factory installed, programmed, and wired to the air handler control panel.
2. All motors shall be brushless DC (BLDC)/electronically commutated motors (ECM) factory programmed and run-tested in assembled units. The motor controller shall be mounted in a touch-safe control box with a built-in integrated user interface and LED tachometer. If adjustments are needed, motor parameters can be adjusted through momentary contact switches on the motor control board accessible without factory service personnel.
3. Motors will soft-ramp between speeds to lessen the acoustics due to sudden speed changes.
4. Motors can be operated at single speed, three speeds or with single zone VAV control. The motor will choose the highest speed if there shall be simultaneous/conflicting speed requests.
5. All motors have integral thermal overload protection and shall be permanently lubricated. BCHE/BCVE single-phase motors have a maximum ambient operating temperature of 104°F and three-phase motors have a maximum ambient operating temperature of 130°F. Motors shall be capable of operating at 90 percent of rated voltage on all speed settings. Motors can operate up to 10 percent over voltage.

**G. Drain Pan:**

1. The drain pan shall be noncorrosive and double-sloped to allow condensate drainage. The drain pan construction shall be polymer. Coils mount above the drain pan—not in the drain pan—thus allowing the drain pan to be fully inspected and cleaned. The drain pan can also be removed for cleaning. The polymer drain pan connections shall be unthreaded 3/4-inch schedule 40 PVC for solvent bonding. The main drain connection shall be at the lowest point of the drain pan. An auxiliary drain connection shall be provided on the

- same side as the main connection for BCHE/BCVE size 72-120.
2. BCVE size 24-60 utilizes a rubber hose for an internal trap. A 3/4-inch schedule 40 PVC can connect to the internal trap with the provided hose clamp.
- H. Filters:
1. Two-inch MERV 13 shall be provided on all blower coil units. Units have a standard flat filter rack that shall be sized for less than 600 feet per minute at nominal airflow. An optional angle filter rack shall be sized for less than 300 feet per minute at nominal airflow. All units and filter racks use standard filter sizes.
- I. Mixing Box:
1. Mixing boxes shall be constructed of galvanized steel single wall panels. They have two low-leak parallel blade dampers that shall be factory-linked together. Mixing boxes also include two side access panels as standard to provide access to filters and the damper actuator.
- J. Controls:
1. Controls options shall be: CSTI, thermostat, and UC400-B. A variety of inputs and outputs shall be available for the CSTI and Tracer controller options. A disconnect switch (for non-electric heat units), fused transformer, contactor(s), and terminal strip shall be provided with the control interface.
- K. Customer Supplied Terminal Interface (CSTI):
1. The control interface shall be intended to be used with a field-supplied, low-voltage thermostat or controller. The control box contains a line voltage to 24-volt transformer and a disconnect switch on non-electric heat units.
- L. Thermostat:
1. The low voltage, wall mounted thermostat shall be field installed. Thermostat control shall be available with 2 position valves, 2 position damper actuators, low limit protection, and condensate overflow protection. The thermostat shall be capable of controlling cooling, heating and automatic changeover all with continuous fan or thermostat controlled fan speeds.
- M. Staged Air Volume System (SAV) for 2-stage cooling models only:
1. Evaporator fan motor:
    - a. Shall have permanently lubricated bearings.
    - b. Shall have a maximum continuous bhp rating for continuous duty operation; no safety factors above that rating.
    - c. Shall be Variable Frequency duty and 2-speed control.
    - d. Shall contain motor shaft grounding ring to prevent electrical bearing fluting damage by safely diverting harmful shaft voltages and bearing currents to ground.
- N. Factory Controller:
1. The factory controller shall deliver single zone VAV control in a stand-alone application. The UC400-B shall ship with units of measure over BACnet link in SI units. The controller shall be factory mounted, wired and programmed for dependable out-of-the box operation. Additional configuration and programming in the field using a service tool.

**2.15 CONDENSER (CU-X)**

- A. General:
  - 1. The Outdoor Units shall be fully charged from the factory for up to 15 feet of piping. The unit shall be designed to operate at outdoor ambient temperatures as high as 115°F. Cooling capacities shall be matched with a wide selection of air handlers and furnace coils that shall be AHRI certified. The unit shall be certified to UL 1995. Exterior shall be designed for outdoor application.
- B. Casing:
  - 1. Unit casing shall be constructed of heavy gauge, galvanized steel and painted with a weather-resistant powder paint finish shall be provided on all louvered panels and the fan top panel. The corner panels shall be pre-painted. All panels shall be subjected to a 1,000 hour salt spray test. The base shall be made of a CMBP-G30 weatherproof material to resist corrosion.
- C. Refrigerant Controls:
  - 1. Refrigeration system controls include condenser fan, compressor contactor and high-pressure switch. High- and low-pressure controls shall be inherent to the compressor. A factory supplied liquid line drier shall be standard. Some models may require field installation.
- D. Compressor:
  - 1. The compressor features internal over temperature, pressure protection and total dipped hermetic motor. Other features include: Centrifugal oil pump and low vibration and noise.
- E. Condenser Coil:
  - 1. The outdoor coil provides low airflow resistance and efficient heat transfer. The coil shall be protected on all four sides by louvered panels.
- F. Low Ambient Cooling:
  - 1. As manufactured, the system shall have a cooling capacity to 55°F. Provide evaporator defrost control with TXV permits low ambient cooling to 30°F.

**PART 3 – EXECUTION****3.01 GENERAL**

- A. Letter and Intent: The installation of all MECHANICAL work shall be in accordance with the letter and intent of the Contract Documents, as determined by the Architect/Engineer.
  - 1. Administration and Supervision: All MECHANICAL work shall be performed under the Contractor's direct supervision, using sufficient and qualified personnel as necessary to complete the work in accordance with the project progress and completion schedule. The Contractor shall assign one or more competent supervisors who shall have authority to accept and execute orders and instructions, and who shall cooperate with the other contractors and subcontractors, the Architect/Engineer and the Owner in all matters to resolve conflicts, avoid delays and complete the Project as efficiently as possible.
  - 2. Existing Conditions: In general, existing mechanical systems and devices are not shown on the Drawings unless pertinent to the remodeling work. Existing mechanical conditions, where indicated, are based on casual field observations and/or drawings for previous construction, and must be field verified. Report any discrepancies to the Architect/Engineer before disturbing the existing installation.

3. Examination: Prior to bidding, examine the Project site to determine all actual observable conditions. No additional compensation will be granted on account of extra work made necessary by the Contractor's failure to investigate such existing conditions.
  4. Inspection: Carefully inspect the Project site and become familiar with the existing systems and conditions, before proceeding with the work.
  5. Coordination: Coordinate all demolition and changeover work with all other trades on the Project, utility companies where applicable, and the Owner.
  6. Protection of Adjacent Materials: During execution of demolition work, give primary consideration to protecting from damage, the building structure, furnishings, finishes and the like, unless specifically indicated to be removed. Existing items or surfaces to remain, which are damaged as a result of this work shall be refinished, repaired or replaced to the satisfaction of the Owner, at no cost to the Contract.
- B. Installation Requirements: All materials and equipment shall be installed as recommended by the respective manufacturers, by mechanics skilled in the particular trade, in a neat and workmanlike manner, in accordance with the standards of the trade, and so as not to void any warranty or UL listing.
1. All work shall be performed in strict conformance to State and National regulations governing mechanical work. A licensed electrician shall be on site, supervising or performing all mechanical work.
  2. Installation shall be by skilled workmen using proper equipment.
  3. Commencement of work shall be deemed as acceptance of existing conditions by the installer.
  4. Entire application shall be in strict accordance with the manufacturer's recommendations and all standards of the Mechanical Code.
- C. Checkout, Testing and Adjusting:
1. General: Checkout and perform all test procedures and adjustments required by the respective manufacturer's written instructions or recommendations, the Contract Documents, and/or  
  
deemed necessary by the Architect/Engineer to establish proper performance and installation of all mechanical systems and equipment. After testing, correct any deficiencies, and replace materials and equipment shown to be defective or unable to perform at design or rated capacity. Re-test without additional cost to the Owner or Contract.
  2. Include product information in close-out manuals.
- D. Patching: When mechanical materials are removed, patch and finish walls, ceilings, floors and other surfaces to match surrounding surfaces. Materials used for patching shall be in conformance with the applicable sections of the Project Manual. Where materials are not specifically described, but required for proper completion of the work, they shall be as selected by the Contractor, subject to the Architect/Engineer's approval.
- E. Shutdowns: All shutdowns to existing services and systems to be scheduled and acceptable, in writing, by the Owner.
- F. Cleaning: Remove from the Project site all dirt, dust and debris, etc. resulting from demolition work, on a daily basis. Do not block or otherwise impair circulation in corridors, stairs, sidewalks, roadways or other traffic areas.

## 3.02 DELIVERY, STORAGE AND HANDLING

- A. General: Comply with Division 1 requirements.
- B. Packing and Shipping: Deliver products to the Project site in original, unopened packaging, properly identified with the manufacturer's identification and shipping and handling instructions, and compliance labels.
- C. Storage and Protection: Comply with all manufacturer's written instructions and recommendations. Store all products in a manner which shall protect them from damage, weather, and entry of debris.
- D. Damaged Products: Do not install damaged products. Arrange for prompt undamaged replacement.

## 3.03 EXAMINATION

- A. Conditions Verification: Examine the areas where, and conditions under which the work is to be performed, and identify and conditions detrimental to the proper and timely completion of the work. Do not proceed until the unsatisfactory conditions have been corrected or are no longer present.

## 3.04 COORDINATION

- A. General: Sequence, coordinate and integrate the installation of all mechanical materials and equipment for efficient flow of work, in conjunction with the other trades. Review the Drawings for work of the other trades, and report and cooperate to resolve any discovered discrepancies, prior to commencing work.
- B. Cooperation: Cooperate with the other Contractors and individual disciplines for placement, anchorage and accomplishment of the work. Resolve and minimize possible interferences in the work, prior to commencing installation.
- C. Chases, Slots and Openings: Arrange for chases, slots and openings during the progress of construction, as required to allow for installation of the mechanical work.
- D. Supports and Sleeves: Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components, as they are constructed.
- E. Obstacles and Interferences: When installing equipment and raceways, provide offsets, fittings, accessories and changes in elevation or location as necessary to avoid obstacles and interferences, per actual field conditions.

## 3.05 DIMENSIONS

- A. Building Dimensions: For exact locations of building elements, refer to dimensioned drawings. However, field measurements take precedence over dimensioned drawings.
- B. Limiting Dimensions: Equipment outlines show on drawings or details of 1/4" = 1'-0" scale or larger, and dimensions indicated on the Drawings are limiting dimensions. Do not install equipment exceeding these dimensions unless specifically accepted by the Architect/Engineer.

## 3.06 EQUIPMENT PROTECTION

- A. Protect all mechanical equipment, materials and work from the weather elements, paint, concrete, mortar, construction debris and damage, until the project is substantially complete. Clean, repair or replace all mechanical work so affected, as required to restore to first class condition.

## 3.07 LAYOUT

- A. General: Install mechanical systems, materials and equipment level and plumb, and parallel and perpendicular to building surfaces, and other building systems components, wherever possible.
- B. Clearances: Prior to commencing work, verify that all mechanical equipment will adequately fit and conform to the manufacturer's required clearances, in the spaces indicated on the Drawings. If rearrangement is required, submit plan and elevation drawings or sketches indicating proposed rearrangement, for Engineer approval. Do not rearrange equipment layouts without the written permission of the Engineer.
- C. Right-of-Way: When laying out mechanical work, give priority in available spaces to HVAC work. Provide offsets as necessary to avoid conflicts. Resolve all conflicts before commencing installation.
- D. Dimensions and Clearances: Field measure all dimensions and clearances affecting the installation of mechanical work, in relation to established datum, building openings and clearances, and the work of other trades, as construction progresses.
- E. Rough-In Locations: Verify final locations for rough-ins with field measurements and requirements of actual equipment being installed.

## 3.08 MOUNTING HEIGHTS

- A. Architectural Elevations: Heights and locations for fixtures and equipment indicated on architectural elevations take precedence over mounting heights and locations indicated on the mechanical drawings, in the event of conflict. If fixtures and equipment are not indicated on the architectural elevations, the mechanical documents govern.

## 3.09 CUTTING AND PATCHING

- A. General: Provide all cutting, drilling, chasing, fitting and patching necessary for accomplishing the work of Division 23. This includes any and all work necessary: to uncover materials to provide for the installation of ill-timed work; to remove and replace defective work and work not conforming to the Contract Documents; to install equipment and materials in existing buildings and structures; in addition to that required during the normal course of construction.
- B. Building Structure: Do not endanger the integrity of any building structure by cutting, drilling or otherwise modifying any structural member, without specific approval. Do not proceed with any modifications to building structure without written permission of the Project Architect.
- C. Repairs: Repair any and all damage to work of any other trade on the Project caused by cutting and patching operations, using skilled mechanics of the trade(s) involved.



**3.10 HANGERS AND SUPPORTS**

- A. General: Rigidly support and secure all mechanical piping, fixtures and equipment to building structure using hangers, supports and fasteners, suitable for the use, materials and loads encountered. Provide all necessary hardware.
- B. Overhead Mounting: Attach overhead mounted equipment to structural framework or supporting metal framework. Do not make attachments to steel roofing, steel flooring or ceiling mineral tile.
- C. Wall Mounting: Support wall mounted equipment by masonry, concrete block, metal framing or sub-framing.
- D. Structural Members: Do not cut, drill or weld any structural member except as specifically accepted by the Project Architect.
- E. Independent Support: Do not support mechanical materials or equipment from other equipment, ductwork or supports for same.
- F. Miscellaneous Supports: Provide any additional structural support steel brackets, angles, fasteners and hardware as required to adequately support all mechanical materials and equipment.

**3.11 IDENTIFICATION**

- A. General: Located nameplate, marking or other identification means on outside of equipment when above ceilings, when in mechanical or electrical equipment rooms, and when in other unfinished areas. Locate on inside of front cover when in finished rooms/areas. Use Contract Document designations for identification legends unless indicated otherwise.
- B. Manufacturer Supplied Equipment Nameplates: Provide equipment nameplates and markings, with all information as required.

**3.12 INSPECTION, PREPARATION AND COORDINATION**

- A. The Mechanical Contractor shall inspect all surfaces and areas that will receive his material and the job conditions as they exist, and report all conditions that may adversely affect his work. Notify Architect and General Contractor of all unsuitable conditions.
- B. Coordinate work with construction schedule and job progress.
- C. Minimize the duration of any mechanical utility shutdowns, as premises will be occupied by tenants.
- D. The Mechanical Contractor shall confer with the General Contractor and other Trades to coordinate his work and to properly locate systems to avoid conflict and interference
- E. Any interference with the work of the other Trades or with architectural or structural details shall be brought to the attention of the Engineer for decision before installation. Contractor's failure to so coordinate his work will not relieve him of the responsibility to correct his work to suit building conditions.

**3.13 PIPING INSTALLATION**

- A. All piping shall be run true and straight at proper pitch without strain and shall be firmly supported throughout. All pipe shall be cut off clean and threaded with sharp dies, reamed and burrs removed.
- B. Where screwed fittings are used, bushings shall not be used from branch connections or reducers. Connections to equipment shall be full size of tappings. Reductions in the run of pipe shall be made with eccentric or concentric reducers as required for draining and venting.
- C. All piping shall be run concealed throughout finished spaces either in furred spaces, shafts, chases, or above hung ceilings.
- D. Special care must be taken throughout the equipment rooms, vertical pipe shafts, above hung ceilings, and elsewhere throughout all floors to maintain maximum headroom and clearances for access to other equipment and to avoid conflict with electrical conduits, lighting fixtures, other piping, ducts, and equipment of other trades.
- E. Connections to equipment shall be made with unions or flanges to permit future replacement, removal and servicing of equipment. Flexible connections where required to isolate movement of equipment from piping system or of piping system from equipment, shall be as specified.
- F. Before any part of the various piping systems is placed in operation, blow out piping with compressed air and/or water to remove all chips and scale and flush and drain until all traces of dirt, scale and other foreign matter have disappeared. Refer to other sections for additional requirements.
- G. Vent all high points and drain all low points throughout the system.
- H. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems; indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Shop Drawings.
- I. Install piping to permit valve servicing.
- J. Install piping at indicated slopes.
- K. Install piping free of sags and bends.
- L. Install fittings for changes in direction and branch connections.
- M. Install piping to allow application of insulation.
- N. Select system components with pressure rating equal to or greater than system operating pressure.
- O. Install groups of pipes parallel to each other, spaced to permit applying insulation and servicing of valves.
- P. Install drains, consisting of a tee fitting, NPS 3/4 ball valve, and short NPS 3/4 threaded nipple with cap, at low points in piping system mains and elsewhere as required for system drainage.
- Q. Install piping at a uniform grade of 0.2 percent upward in direction of flow.

- R. Reduce pipe sizes using eccentric reducer fitting installed with level side up.
- S. Install branch connections to mains using mechanically formed tee fittings in main pipe, with the branch connected to the bottom of the main pipe. For up-feed risers, connect the branch to the top of the main pipe.
- T. Install unions in piping, NPS 2 and smaller, adjacent to valves, at final connections of equipment, and elsewhere as indicated.
- U. Install strainers on inlet side of each control valve, pressure-reducing valve, solenoid valve, in-line pump, and elsewhere as indicated. Install NPS 3/4 nipple and ball valve in blowdown connection of strainers NPS 2 and larger. Match size of strainer blowoff connection for strainers smaller than NPS 2.
- V. Install sleeves for piping penetrations of walls, ceilings, and floors.
- W. Install sleeve seals for piping penetrations of concrete walls and slabs.
- X. Install escutcheons for piping penetrations of walls, ceilings, and floors.
- Y. Install refrigerant piping according to ASHRAE 15.
  - 1. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- Z. Perform the following tests on hydronic piping:
  - 1. Use ambient temperature water as a testing medium unless there is risk of damage due to freezing. Another liquid that is safe for workers and compatible with piping may be used.
  - 2. While filling system, use vents installed at high points of system to release air. Use drains installed at low points for complete draining of test liquid.
  - 3. Isolate expansion tanks and determine that hydronic system is full of water.
  - 4. Subject piping system to hydrostatic test pressure that is not less than 1.5 times the system's working pressure. Test pressure shall not exceed maximum pressure for any vessel, pump, valve, or other component in system under test. Verify that stress due to pressure at bottom of vertical runs does not exceed 90 percent of specified minimum yield strength or 1.7 times "SE" value in Appendix A in ASME B31.9, "Building Services Piping."
  - 5. After hydrostatic test pressure has been applied for at least 10 minutes, examine piping, joints, and connections for leakage. Eliminate leaks by tightening, repairing, or replacing components, and repeat hydrostatic test until there are no leaks.
  - 6. Prepare written report of testing.
- AA. Perform the following before operating the system:
  - 1. Open manual valves fully.
  - 2. Inspect pumps for proper rotation.
  - 3. Set makeup pressure-reducing valves for required system pressure.
  - 4. Inspect air vents at high points of system and determine if all are installed and operating freely (automatic type), or bleed air completely (manual type).
  - 5. Set temperature controls so all coils are calling for full flow.
  - 6. Inspect and set operating temperatures of hydronic equipment, such as boilers, chillers, cooling towers, to specified values.
  - 7. Verify lubrication of motors and bearings.

**3.14 HYRNIC SYSTEM CLEANING AND FLUSHING**

- A. All water circulating systems for the project shall be thoroughly cleaned before placing in operation to rid the system of dirt, piping compound, mill scale, oil, and any and all other material foreign to the water being circulated. Clean all strainers.
- B. Extreme care shall be exercised during construction to prevent all dirt and other foreign matter from entering the pipe or other parts of the system. Pipe stored on the project shall have the open ends capped and equipment shall have all openings fully protected. Before erection, each piece of pipe, fitting, or valve shall be visually examined and all dirt removed.
- C. Initial flushing: Remove loose dirt, scale, rust, and like deleterious substances without damage to any system component.
  - 1. Provide temporary piping or hose to bypass heat pump coils, control valves, exchangers and other factory cleaned equipment unless acceptable means of protection are provided and subsequent inspection of hide out areas takes place.
  - 2. Isolate or protect clean system components, including pumps and pressure vessels, and remove any component which may be damaged. Open all valves, drains, vents and strainers at all system levels. Remove plugs, caps, spool pieces, and components to facilitate early debris discharge from system.
  - 3. Sectionalize system to obtain debris carrying velocity of 6 feet per second. Connect dead end supply and return headers as necessary. Flush bottoms of risers.
  - 4. Install temporary strainers where necessary to protect down stream equipment. Supply and remove flushing water and drainage by various type hose, temporary and permanent piping and Contractor's booster pumps. Flush piping systems with chemically treated water; then remove and clean or replace strainer screens.
- D. Cleaning: Using products supplied by water treatment contractor, circulate systems at normal temperature to remove adherent organic soil, hydrocarbons, scale, debris, pipe joint compounds, iron oxide, and like deleterious substances not removed by flushing, without chemical or mechanical damage to any system component.
  - 1. Keep isolated equipment which is "clean" and where dead end debris accumulation cannot occur. Sectionalize system to circulate at velocities not less than 6 feet per second. Circulate each section for not less than four hours. Blow down all strainers, or remove and clean as frequently as necessary. Drain and prepare for final flushing.
- E. Final Flushing: Return systems to conditions required by initial flushing after all cleaning solution has been displaced by clean make up. Flush all dead ends and isolated clean equipment. Gently operate all valves to dislodge any debris in valve body by throttling velocity. Flush for not less than one hour.
- F. When the system is successfully cleaned, flushed, refilled and bled, perform an analysis of supply water to determine quality of water available at Project site and provide initial chemical treatment based on recommendations of an experienced HVAC water treatment specialist.
- G. The HVAC contractor shall not add any water treatment chemicals, or at any time "stopleak" compounds to the system.

**3.15 EQUIPMENT INSTALLATION**

- A. All equipment furnished under this Section shall be installed in accordance with its manufacturer's printed installation instructions, whether so shown on the drawings or not, and all labor and materials required to accomplish this shall be furnished by the HVAC contractor and be included in his bid.

**3.16 PIPING INSULATION**

- A. All pipe insulation shall be installed by a qualified insulation contractor regularly engaged in the application of ductwork and piping insulation.

- B. Insulation shall not be omitted on piping in walls or on branches running through radiator covers. Longitudinal seams on jackets shall be located so that they are not visible from the floor. Remove all stickers from covering.
- C. Insulation shall be applied over clean pipe with all joints butted firmly together and sealed with butt strips. Insulation shall run through all hangers and sleeves and have an 18 gauge sheet metal saddle equal to three times the pipe diameter in length. All pipes over 2" in diameter shall be supported through insulation by fitting a protection saddle to the thickness of the insulation inside the vapor barrier jacket.
- D. Fittings, valves, etc. shall be insulated with the proper factory pre-cut insulation. The ends of the insulation shall be tucked snugly into the throat of the fitting and the edge adjacent to the pipe covering tufted and tucked into fully insulated pipe fitting. The one piece PVC fitting cover shall then be secured by taping the ends of the adjacent pipe covering.
- E. Penetrations:
  - 1. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.
  - 2. Seal penetrations with flashing sealant.
    - a. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
    - b. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
    - c. Seal jacket to wall flashing with flashing sealant.
  - 3. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions. a. Insulation Installation at Fire-Rated Wall and Partition Penetrations:  
Install insulation continuously through penetrations of fire-rated walls and partitions.
- F. Installation of Flexible Elastomeric Insulation (Refrigerant Piping):
  - 1. Seal longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.
  - 2. Insulation Installation on Pipe Fittings and Elbows:
    - a. Install mitered sections of pipe insulation.
    - b. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.
  - 3. Insulation Installation on Valves and Pipe Specialties:
    - a. Install preformed valve covers manufactured of same material as pipe insulation when available.
    - b. When preformed valve covers are not available, install cut sections of pipe and sheet insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation.
    - c. Install insulation to flanges as specified for flange insulation application.
    - d. Secure insulation to valves and specialties and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

- G. Indoor Piping Insulation Schedule:
  - 1. Refrigerant Suction and Hot-Gas Flexible Tubing:
    - a. All Pipe Sizes: Insulation shall be: Flexible Elastomeric: 1 inch thick.
  - 2. Condensate and Equipment Drain Water below 60 Deg F:
    - a. All Pipe Sizes: Mineral-Fiber, Preformed Pipe Insulation, Type I: 1/2 inch thick.
  - 3. Heating-Hot-Water Supply and Return, 200 Deg F and Below:
    - a. NPS 1-1/2 and Smaller: Insulation shall be:
      - i. Mineral-Fiber, Preformed Pipe, Type I: 1-1/2 inch thick.
    - b. NPS 2 and Large: Insulation shall be:
      - i. Mineral-Fiber, Preformed Pipe, Type I: 2 inch thick.
- H. Outdoor, Above Ground Piping Insulation Schedule:
  - 1. Refrigerant Suction and Hot-Gas Flexible Tubing:
    - a. All Pipe Sizes: Insulation shall be: Flexible Elastomeric: 2 inches thick.
- I. Outdoor, Field-Applied Jacket Schedule:
  - 1. Install jacket over insulation material. For insulation with factory-applied jacket, install the field-applied jacket over the factory-applied jacket.
  - 2. Refrigerant Piping and Tubing, Exposed: Aluminum, Smooth: 0.020 inch thick.

### **3.17 REFRIGERANT SYSTEM CHARGING**

- A. Charge system using the following procedures:
  - 1. Install core in filter dryers after leak test but before evacuation.
  - 2. Evacuate entire refrigerant system with a vacuum pump to 500 micrometers. If vacuum holds for 12 hours, system is ready for charging.
  - 3. Break vacuum with refrigerant gas, allowing pressure to build up to 2 psig.
  - 4. Charge system with a new filter-dryer core in charging line.

### **3.18 DUCT INSULATION**

- A. All duct insulation shall be installed by an independent insulation contractor regularly engaged in that business.
- B. Flexible fiber glass blanket type duct insulation with a factory applied aluminum foil facing reinforced with fiberglass scrim laminated to a UL Kraft.
- C. Apply to ductwork with a 3" - 4" overlap, and secure overlap tightly with outward clinching staples. Care shall be taken to minimize compression during installation. Tears and breaks in the facing shall be sealed with a foil-scrim-kraft (fsk) vapor barrier tape.
- D. Insulation on ductwork more than 24" wide shall be additionally secured on the bottom with mechanical fasteners spaced approximately 18" on the longitudinal center. Seal pin penetrations with vapor barrier tape as above.
- E. Install materials in accordance with manufacturer's instructions. Maintain integrity of vapor barrier on ductwork insulation.
- F. Extend ductwork insulation continuous through sleeves, hangers, and penetrations.

**3.19 TEMPERATURE CONTROL SYSTEMS**

- A. The **MC** shall retain a firm specializing in temperature control and sequencing of operation herein after referred to as **TC** to furnish all labor, materials, equipment, and services necessary and as required to satisfy the work of this section.
  - 1. The **MC's** firm may perform the temperature control work if they employ qualified technicians with demonstrated experience in control system work and the firm customarily performs the type of work required for this project.
- B. Provide all conduit, wire, sensors, relays, actuators, control devices and enclosures, etc. To make the work of this section complete in every detail.
  - 1. The **TC** shall furnish and install all control wiring associated with low- voltage (24v) systems.
  - 2. The **EC** shall furnish and install all power (120v) wiring associated with the control systems.
- C. The **TC** shall furnish all labor and materials necessary for demolition/removal of existing control systems made obsolete by the work of this project.
- D. Submittals
  - 1. Submit shop drawings for each system (equipment) automatically controlled, containing the following information:
    - a. Schematic flow and wiring diagrams showing fans, pumps, coils, dampers, valves, and control devices.
  - 2. Wiring diagrams are to be point-to-point.
    - a. Label each control device with setting or adjustable range of control.
    - b. Indicate between factory and field wiring.
    - c. Indicate each control panel required, with internal and external wiring clearly indicated.
  - 3. Include narrative description of sequence of operation and proposed location of any panels.
  - 4. Valve schedules with size, type, close-offs, failed position, and CV calculations.
  - 5. Include copy of all shop drawings in each maintenance manual.
  - 6. Shop drawings shall clearly indicate all 120v system work to be performed by the EC.
- E. Miscellaneous Hardware
  - 1. Provide all conduit, wire, sensors, relays, actuators, control devices and enclosures, etc. To make the work of this section complete in every detail.
- F. Thermostats
  - 1. Provide LCD controller/thermostat for each air handling unit.
  - 2. Thermostat shall be programmable and digital with user interface for occupant adjustment in the occupied space.
    - a. Field confirm exact location, occ/unocc setpoint schedule with Owner's Rep.

**3.20 SEQUENCE OF OPERATION****A. AIR HANDLING UNITS (AHU-1 & AHU-2)**

1. Refer to Sequence of Operation on sheet M-500.

**3.21 FIRE STOP SYSTEM**

- A. Install firestop systems in accordance with ul approved design details and the manufacturer's instructions. Install sleeves and piping with required clearance spaces, allowing installation of sealing materials. Do not exceed the outside diameter of the sleeves and piping by more than one inch or by less than 1/4 inch when making openings for penetrations. Install firestop systems so as to completely seal openings to prevent passage of smoke and water.

**3.22 TESTING, ADJUSTING AND BALANCING**

- A. Testing Adjusting & Balancing shall be in accordance with the following:
1. TABB – HVAC Testing, Adjusting, and Balancing International Standards
  2. Sheet Metal and Air Conditioning Contractors' National Association (SMACNA) HVAC Systems - Testing, Adjusting, and Balancing.
  3. NEBB – Procedural standards for TAB of environmental systems.
  4. AABC – National standards for total systems balance.
- B. Minimum procedures for AIR SYSTEMS should include the following:
1. Test and adjust fan RPM to design requirements.
  2. Test and record motor full load nameplate rating and actual ampere draw.
  3. Test and record system static pressures, fan suction, and discharge.
  4. Adjust all main supply and return air duct to within tolerances of proper design CFM.
  5. Vary total system air quantities by adjustment of fan speeds.
- C. Adjusting
1. Recorded data shall represent actual measured or observed conditions.
  2. Permanently mark setting of valves, dampers, and other adjustment devices allowing for settings to be restored. Set and lock memory stops.
  3. Leave systems in proper working, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.
- D. General Procedures for Hydronic Systems
1. Prepare test reports with pertinent design data, and number in sequence starting at pump to end of system. Check the sum of branch-circuit flows against the approved pump flow rate. Correct variations that exceed plus or minus 5 percent.
    - a. Prepare hydronic systems for testing and balancing according to the following, in addition to the general preparation procedures specified above.
  2. Open all manual valves for maximum flow.
    - a. Check liquid level in expansion tank.
    - b. Check makeup water-station pressure gage for adequate pressure for highest vent.
    - c. Check flow-control valves for specified sequence of operation, and set at indicated flow.
    - d. Set differential-pressure control valves at the specified differential pressure. Do not set at fully closed position when pump is positive-displacement type unless several terminal valves are kept open.



- e. Set system controls so automatic valves are wide open to heat exchangers.
- f. Check pump-motor load. If motor is overloaded, throttle main flow-balancing device so motor nameplate rating is not exceeded.
- g. Check air vents for a forceful liquid flow exiting from vents when manually operated.

**3.23 CLEANING AND TOUCH-UP PAINTING**

- A. Perform cleaning as required by Division 1.
- B. General Cleaning: Periodically remove from the Project site, all waste, rubbish and construction debris accumulated from construction operations, and maintain order. The premises shall be left clean and free of any debris and unused construction materials, prior to Owner's acceptance.
- C. Mechanical Equipment: Remove all dust, dirt, debris, mortar, wire scraps, rust and other foreign materials from the interior and exterior of all mechanical equipment and enclosures, and wipe down.
- D. At the completion of all work, all equipment on the project shall be checked for painting damage, and any factory finished paint that has been damaged shall be repaired to match the adjacent areas.
- E. Touch-Up Painting: Restore and refinish to original condition, all surfaces of mechanical equipment scratched, marred and/or dented during shipping, handling or installation. Remove all rust and prime and paint as recommended by the manufacturer.
- F. Any metal or especially covered areas that have been deformed shall be replaced with new material and repainted to match the adjacent areas.
- G. At the completion of all work, all equipment on the project shall be checked and thoroughly cleaned including coils, plenums, under equipment and any and all other areas around or in equipment provided under this Section. Any filters used during construction shall be replaced with new filters during final clean-up.
- H. At completion of work included under this Section, clean, remove and cart away from premises all rubbish and accumulated materials and leave the work in a satisfactory condition.

**3.24 CLOSEOUT PROCEDURES**

- A. Retain the services of the manufacturer's representative to provide start-up services and owner training for all HVAC equipment provided under this contract.
- B. Equipment shall be provided with manufacturer's standard warranty, commencing on the date of the manufacturer's start-up.

**END OF SECTION**

## 1. ADDITIONAL GENERAL CONDITIONS

**A. LIQUIDATED DAMAGES:** Liquidated damages apply for each day beyond the contract completion date until the work is substantially complete.

A. As actual damages for any delay in completion are impossible to determine, the Contractor and his/her sureties shall be liable for and **shall pay five hundred dollars (\$500.00) as fixed**, and agreed liquidated damages for each calendar day of delay beyond the contract completion date until the work is substantially complete due to serious conflicts with start of school if the project is delayed.

B. For purposes of liquidated damages, Substantial Completion means that the value of the work remaining to be done is, in the estimate of the Engineer, and approved by the Owner, less than one percent of the original contract price. When the Contractor considers the work to be complete, s/he shall request, in writing, to the Engineer, an inspection to be conducted by the Owner, the Contractor, and the Engineer. Any deficiencies in the work shall be noted in a monetized "Punch List" prepared by the Engineer. If the monetized punch list amounts to less than 1% of the original contract price, the work shall be considered to be substantially complete as of the date of the written request for a final inspection. If the monetized punch list amounts to more than 1% of the original contract price, the work shall be considered not substantially complete.

**B. BUILDING PERMIT:** It is the responsibility of the Contractor to apply for, pay for, and secure a building permit and any other required electrical/fire system permits for the Work. The Contractor is responsible for contacting the Engineer and the Town of Deerfield's Building Inspector for timely and required inspections of the Work.

**C. PERSONNEL PROTECTION:** The Contractor is responsible for all safety and protection of all persons at the site of the Work. **MASKS MUST BE WORN AT ALL TIMES BY WORKERS IN THE BUILDING.**

**D. WARRANTY:** In addition to other guarantees or warranties required under law or other sections of the specification, the Contractor warrants all materials furnished and labor performed under this Contract to be free from defects or errors in workmanship or installation for a period of one year from the date of Substantial Completion of work, as certified by the Engineer, except that for items of work not completed at the time of Substantial Completion, the warranty period shall be for one year from completion of those items of work. The Contractor shall indemnify the Town for the full cost of any damage to the property that may result by reason of such defects or errors and shall indemnify the Town from and against any and all claims, demands, losses, costs, expenses, liabilities, and damages, including reasonable attorney's fees and expenses, arising out of or on account of this Contract, including but not limited to claims brought against the Town for alleged infringement of patents based upon any methods of construction of application or upon materials furnished under the Contract.

## 2. BID INSTRUCTIONS and GENERAL CONTRACT TERMS

See the Sample Contract, attached for detailed contract terms and conditions

**NOTE: The estimate for this project is under \$150,000; therefore, DCAMM Certification is not required. References are required and further references may be sought by FRCOG on behalf of the Town.**

1. Sealed Bids following all instructions on the IFB notice page shall be received on or before the deadline for receipt of bids.
2. If you received this bid package from any source other than the Franklin Regional Council of Governments, you must request / download the bid from <https://frcog.org/bids> to receive any addenda/notices that may be issued regarding this bid.
3. All work is to be done by licensed, certified, and skilled tradespeople.
4. The contractor will be bound by all applicable statutory provisions of law of the Federal Government, the Commonwealth of Massachusetts, and local codes (including current building and fire codes).
5. As the Town is exempt from the payment of Federal Excise Taxes and Massachusetts Sales Tax, prices quoted herein are not to include these taxes.
6. Prevailing Wage rates set at the Massachusetts Department of Labor and Industries apply AS WELL AS Davis Bacon Federal Wages. The higher of the appropriate wage applies. Appropriate wage schedules are attached.
7. Labor and Materials/Payment Bond and Performance Bond is required at the time of contract signing in the amount of 100% of the construction bid. Bond forms will be provided by FRCOG.
8. A bidder will be held to the terms and the prices submitted for the duration of the contract period if a contract is signed by both parties within 30 days from bid opening.
9. Contract execution will be conditioned upon producing an insurance certificate as outlined on the INSURANCE REQUIREMENTS page.
10. A contract substantially in accord with the Sample Contract found in this bid package will be required to be signed by the Contractor and the Town of Deerfield. The Engineer's specifications will be central to the legally binding contract. Any terms or conditions that cannot be met by the bidder must be brought to the FRCOG's attention in a Written Question before the deadline. If the matter can be resolved in an Addendum, one will be issued so that all Bidders are notified of any exceptions allowed.
11. **RULE FOR AWARD:** A contract will be issued by the Town of Deerfield to the responsible and responsive bidder based upon bid price taking into consideration past performance and reliability of the bidder, quality of product and/or service, and degree of exclusion, exemption, or restrictions on the Bid Form. The contract will

include but not be limited to all general and specific conditions contained in the Invitation For Bids and the Bid submitted by the awarded bidder. Payment will be made within 30 days of satisfactory acceptance of the work. A sample contract is provided in Attachment B. If two responsible bids are received for the same price bid, the company with its office in (1) Franklin County, MA; (2) Massachusetts will be selected in that priority. If companies are not located in Franklin County or Massachusetts, a witnessed coin toss at FRCOG will be taken.

12. A contract will be signed between the awarded contractor and the Town of Deerfield.
13. The Franklin Regional Council of Governments Chief Procurement Officer will be available to answer any general questions about procedure, etc., but no question will be answered that in any way could give an unfair advantage to a contractor except through a written Addendum. Due to vacation schedules, written questions should be directed to **BOTH:**

Andrea Woods, Chief Procurement Officer  
Franklin Regional Council of Governments  
[bids@frcog.org](mailto:bids@frcog.org)

**and**

Mike Trzcinski, P.E., LEED A.P.  
*Principal Engineer*

**HESNOR ENGINEERING ASSOCIATES, PLLC**  
[mtrzcinski@hesnor.com](mailto:mtrzcinski@hesnor.com)

14. The Contractor must submit with their response a list of **at least five (5)** projects which they have successfully completed, giving the name and address of the projects so that they may be investigated prior to the award of the contract. **Publicly owned** projects of similar size and scope are preferred. A contact person with CURRENT PHONE NUMBER must be provided for each reference.
15. Bids which are incomplete, not properly endorsed or signed, or otherwise contrary to instructions may be rejected as non-responsive by the Chief Procurement Officer. Conditional Bids will not be accepted.
16. Any inferior or damaged product, as determined by the Town of Deerfield, will be replaced at the total expense of the Vendor.
17. Any restrictions, qualifications, or deviations from specifications must appear either on the Bid Form or on an attachment thereto.
18. OSHA Certification  
All contractors working on public works projects will be required to certify that ALL employees employed at the work site have successfully completed an OSHA

approved course in construction safety at least 10 hours in duration. This law requires general contractors to have on file records of all employees' OSHA 10- hour training and provide proof to the various agencies in charge of the work. This also applies to all subcontractors, hired trucks, and hired equipment with operators. Every bidder must certify that all persons who are employed by them for this bid are certified. Proof does not have to be submitted with this bid, but must be available upon request.

## 19. INSURANCE REQUIREMENTS

The Contractor shall at all times during the Contract maintain in full force and effect Employer's Liability, Worker's Compensation, Bodily Injury Liability, and Property Damage and General Liability Insurance, including contractual liability coverage. All insurance shall be by insurers and for policy limits acceptable to the **TOWN OF DEERFIELD** and before commencement of work hereunder the Contractor agrees to furnish the TOWN certificates of insurance or other evidence satisfactory to the TOWN to the effect that such insurance has been procured and is in force.

For the purpose of the Contract, the Contractor shall carry the following types of insurance in at least the limits specified below:

COVERAGES	LIMITS OF LIABILITY
Worker's Compensation	Statutory **
Employer's Liability	\$500,000.00
Automobile Liability	\$1,000,000.00 combined single limit for bodily injury and property damage
General Liability	\$1,000,000.00 each occurrence \$2,000,000.00 aggregate
Excess Umbrella Liability	\$1,000,000

\*\* A "Workers Compensation Insurance Affidavit: General Business" as issued by the Massachusetts Department of Industrial Accidents will be required of the winning bidder(s) at contract signing if any employees/owners of the Company are not covered under the WC policy.. See <http://www.mass.gov/lwd/docs/dia/forms/f-aff-general.pdf>

The TOWN OF DEERFIELD shall be named as additional insured under the liability and automobile insurance. The excess/umbrella liability insurance policy should contain a broad form general liability endorsement.

Failure or refusal of the successful bidder to execute and deliver a Signed Contract, Certificate of Insurance, Performance and Payment Bond acceptable to the Town within ten days after notice of contract award will result in the forfeiture of the Bid Deposit/Bond as Liquidated Damages. The Contract will be awarded to the next lowest qualified bidder or the IFB re-advertised, as the Town believes is in the best public interest.

## GENERAL INFORMATION FORM

SUBMIT THIS FORM AS THE FIRST PAGE OF YOUR RESPONSE

Name of Organization: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

Years in Business: \_\_\_\_\_

Organization is (check one):

☐ Corporation      ☐ Partnership      ☐ Association  
☐ Joint Venture      ☐ Sole Proprietorship      ☐ Public Agency  
☐ Quasi-Public Agency      ☐ Other: (Explain) \_\_\_\_\_

Organization's Address: \_\_\_\_\_  
\_\_\_\_\_

Email Address of Contact Person: \_\_\_\_\_

Name, Title and Telephone Number of the Organization's Authorized Representative:

\_\_\_\_\_  
\_\_\_\_\_

Acknowledgment of received Addenda No(s): \_\_\_\_\_

The undersigned, being cognizant of the pages, documents and attachments concerned herewith agrees to provide the Town of Deerfield with the services described in the Invitation for Bids dated and subsequently amended by any Addenda.

The Proposer agrees to comply with all Local, Federal (specifically ARPA), and State requirements.

The Proposer hereby affirms that this Proposal is genuine, not a sham or collusive, and is not made in the interest of any person not therein named.

Authorized Signature:  \_\_\_\_\_

Date: \_\_\_\_\_

**Deerfield Police Station HVAC Upgrades  
Deerfield, MA  
IFB 2023-2070**

**Bid Form  
Form for General Bid**

To the Town of Deerfield, Massachusetts, (hereinafter called the "Owner") acting through its Selectboard, duly authorized therefore, who act solely for said Town and without personal liability to themselves.

Ladies/Gentlemen:

The undersigned \_\_\_\_\_, as bidder, declares that the only persons or parties interested in this bid as principals are those named herein; that the bidder has carefully examined the Invitation for Bids and the Specifications (and addenda thereto); and s/he bids and agrees, if this bid is accepted, that the bidder will furnish all materials and labor necessary for the completion of the Work as specified in the Proposal, in the manner and time therein prescribed and according to the requirements of Owner as herein set forth.

The Bidder agrees that the Owner will have thirty (30) consecutive days from date of opening to accept the bid, except as described in the specifications, the unit(s) at the price, therein. The Bidder also understands that the Owner reserves the right to accept or reject any or all bids and to waive any informalities in the Bids if it is in the Owner's interest to do so. The Advertisement for Bidders, Information for Bidders, Specifications and Bid Form attached thereto, shall become a contract upon the receipt by the Bidder of written acceptance of this bid by the Owner.

The Bidder agrees that activities not expressly mentioned in these specifications for Lump Sum Work, but involved in carrying out their intent are will be performed the same as though they were specifically mentioned, described, and delineated – including the provision of incidental equipment and supplies.

The Bidder certifies that all materials meet or exceed the requirements of the bid specifications and they are licensed to perform the services in the Commonwealth of Massachusetts and that workmanship is warranted for at least one year.

Pursuant to M.G.L. Ch. 62C, Sec. 49A, the Bidder certifies under the penalties of perjury that, to the best of their knowledge and belief, they are in compliance with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

*Form for General Bid Page 2*

The undersigned certifies under penalties 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.

The undersigned certifies under penalties of perjury that the said undersigned is not presently debarred from doing public construction work by the Federal Government or the Commonwealth of Massachusetts under the provisions of Section 29F of Chapter 29 of the General Laws, 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 all of their employees who will be employed at the work site have successfully passed the OSHA approved 10-hour safety course, and we have proof on file. They also certify that they are able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work.

The undersigned certifies that they shall adhere to the provisions of Massachusetts General Laws, Chapter 268A, and Federal law 2 CFR § 200.318 with respect to the Conduct of Public Employees, the so-called Conflict of Interest laws.

The Bidder certifies that all materials meet or exceed the requirements of the bid specifications. This bid may include proprietary materials. Any OR EQUAL submissions require accompanying documentation. The Engineer has the sole discretion to determine if a product or method is EQUAL. Bidder is additionally notified that Liquidated Damages will apply for work completed more than 90 days from Notice to Proceed.

The Bidder will take in full payment, therefore, the following price, to wit:

Please acknowledge any Addenda to the IFB by initialing below:

#1 \_\_\_\_\_ #2 \_\_\_\_\_ #3 \_\_\_\_\_

Total Lump Sum Bid Amount \$ \_\_\_\_\_

In words:

\_\_\_\_\_



Signature  \_\_\_\_\_ Printed Name \_\_\_\_\_

Title \_\_\_\_\_ Company Name \_\_\_\_\_

Company Address \_\_\_\_\_

Phone \_\_\_\_\_ Fax \_\_\_\_\_ Email \_\_\_\_\_

Date \_\_\_\_\_

The Office of the Attorney General, Washington, DC, requires the following information on all bid proposals amounting to \$1,000.00 or more:

\_\_\_\_\_ Federal Tax ID Number (this number is regularly used by companies when filing their "EMPLOYER'S FEDERAL TAX RETURN, U.S." Treasury Department Form 941

\*IF A CORPORATION, INCLUDE WITH YOUR BID A CORPORATE RESOLUTION LISTING ALL DULY AUTHORIZED SIGNERS ON BEHALF OF THE CORPORATION AND CHECK HERE ☐

\*IF A LIMITED LIABILITY CORPORATION (LLC), INCLUDE THE NAME OF THE LLC MANAGER AND CHECK THE APPROPRIATE CLASSIFICATION OF LLC ☐

Indicate tax classification: ☐ D (disregarded entity) ☐ C (corporation) ☐ P (partnership)

Or ☐ S (special tax status)

\_\_\_\_\_ LLC MANAGER NAME

\*IF A PARTNERSHIP, INCLUDE A LIST OF NAMES/ADDRESSES OF ALL PARTNERS AND CHECK HERE ( add additional page if necessary) ☐

_____	NAME
_____	NAME
_____	NAME
_____	NAME

\*IF A PROPRIETORSHIP, COMPLETELY FILL OUT INFORMATION ON BID FORM ONLY AND CHECK HERE ☐

**REFERENCES**

Please list **FIVE** references, preferably for PUBLICLY OWNED projects of similar size and scope. Please make sure contact information is **CURRENT**. Inability to check references may affect the eligibility of your bid. Use additional sheet for more references. Bidder may use their own format if all information is included.

1. _____ Name of Project	_____ Contract Dates
_____ Name of Contact Person	_____ Title of Contact Person
_____ Phone Number	_____ Scope of Work
_____	_____
_____	_____

2. _____ Name of Project	_____ Contract Dates
_____ Name of Contact Person	_____ Title of Contact Person
_____ Phone Number	_____ Scope of Work
_____	_____
_____	_____

3. _____ Name of Project	_____ Contract Dates
_____ Name of Contact Person	_____ Title of Contact Person
_____ Phone Number	_____ Scope of Work
_____	_____
_____	_____

REFERENCES, Cont.

4 \_\_\_\_\_  
Name of Project

\_\_\_\_\_  
Contract Dates

\_\_\_\_\_  
Name of Contact Person

\_\_\_\_\_  
Title of Contact Person

\_\_\_\_\_  
Phone Number

\_\_\_\_\_  
Scope of Work

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5 \_\_\_\_\_  
Name of Project

\_\_\_\_\_  
Contract Dates

\_\_\_\_\_  
Name of Contact Person

\_\_\_\_\_  
Title of Contact Person

\_\_\_\_\_  
Phone Number

\_\_\_\_\_  
Scope of Work

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## CHECK LIST FOR REQUIRED SUBMITTALS

- \_\_\_ Completed and Signed General Information Form, Signed Bid Form and Bid Signature Authorization Form (with required additional information if Corporation or Partnership)
- \_\_\_ Bid bond/deposit in the amount of 5% of the bid
- \_\_\_ Specifications / Complete "Tear Sheet" or Brochure of the Equipment to be Installed
- \_\_\_ References

Bids must be SEALED and delivered to

ANDREA WOODS, CPO

FRANKLIN REGIONAL COUNCIL OF GOVERNMENTS

12 OLIVE ST., #2,

GREENFIELD, MA 01301.

 don't forget to include authorized signature where indicated

## ATTACHMENT A

Sample Contract – Submission of a bid denotes acceptance of the following terms and conditions. Any suggested changes to the Contract must be submitted during the written question period and will be addressed in an addendum if required. Signed forms at the end are not required with the Bid, but at the time of contract signing.

### AGREEMENT

THIS AGREEMENT made this \_\_\_\_\_ day of \_\_\_\_\_  
in the year Two Thousand and Twenty three, between \_\_\_\_\_, with  
a usual place of business at \_\_\_\_\_, hereinafter called  
the CONTRACTOR, and the Town of Deerfield, acting by its Board of Selectmen, with a usual  
place of business at 38 Church Street, Deerfield, MA 01337, hereinafter called the OWNER.

The CONTRACTOR and the OWNER, for the consideration hereinafter named, agree as follows:

#### 1. Scope of Work

The Contractor shall furnish all labor, materials, equipment and insurance to perform all work required for the project known as **DEERFIELD POLICE STATION HVAC IMPROVEMENTS**, in strict accordance with the Contract Documents and all related Specifications. The said Documents, Specifications, and any supplemental general conditions are incorporated herein by reference and are made a part of this Agreement.

#### 2. Contract Price

The Owner shall pay the Contractor for the performance of this Agreement, subject to additions and deductions provided herein, in current funds, the sum of \_\_\_\_\_.

#### 3. Commencement and Completion of Work

It is agreed that time is of the essence of this Agreement. The Contractor shall commence and prosecute the work under this Agreement upon execution hereof and shall complete the work on or before \_\_\_\_\_.

- A. Definition of Term: The Term "Substantial completion" shall mean the date certified by the Owner when construction is sufficiently complete, in accordance with the Contract Documents, so the Owner may occupy the project, or designated portion(s) thereof, for the use for which it is intended.
  - B. Time as Essential Condition: It is understood and agreed that the commencement of and substantial completion of the work are essential conditions of this Agreement. It is further agreed that time is of the essence for each and every portion of the Contract Documents wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the Contract Documents any additional time is allowed for the completion of any work, the new time fixed by such extension shall be of the essence of this Agreement. It is understood and agreed that the times for the completion of the work are reasonable, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.
  - C. Progress and Completion: Contractor shall commence work promptly upon execution of this Agreement and shall prosecute and complete the work regularly, diligently and uninterruptedly at such a rate of progress as will insure Substantial Completion within the stipulated period.
4. Performance of the Work
- A. Direction of the Work: The Contractor shall supervise and direct the Work, using his best skills and attention which shall not be less than such state of skill and attention generally rendered by the contracting profession for projects similar to the Project in scope, difficulty and location. The Contractor shall maintain adequate supervisory personnel at the project site during the performance of the Work. He shall be solely responsible for all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Agreement.
  - B. Responsibility for the Work: (1) The Contractor shall be responsible to the Owner for the acts and omissions of his employees, Subcontractors and their agents and employees, and other persons performing any of the Work under a contract with the Contractor. This obligation shall also extend to the presence on the Site of suppliers of materials or equipment, their employees, contractors, and agents engaged in the work.  
  
(2) The Contractor shall not be relieved from his obligations to perform the Work in accordance with the Contract Documents either by the activities or duties of the Owner in its administration of the Agreement, or by inspections, tests or approvals required or performed by persons other than the Contractor.
  - C. Permits and Fees: Unless otherwise expressly provided, the Contractor shall secure and pay for all permits and fees, licenses and inspections necessary for the proper execution and completion of the Work which are customarily secured after execution of the Agreement and which are legally required at the time the bids are received, and the same shall at all times be the property of the Owner and shall be delivered to the Owner upon completion of the Project.

- D. Notices, Compliance With Laws: (1) The Contractor shall give all notices and comply with all federal, state and local laws, ordinances, rules, regulations and lawful orders of any public authority bearing on the performance of the Work. The Contractor shall provide the Owner with reproductions of all permits, licenses and receipts for any fees paid. The Owner represents that it has disclosed to the Contractor all orders and requirements known to the Owner of any public authority particular to this Agreement.
- (2) If the Contractor observes that any of the Contract Documents are at variance with applicable laws, statutes, codes and regulations in any respect, he shall promptly notify the Owner in writing, and any necessary changes shall be accomplished by appropriate modification.
- (3) If the Contractor performs any Work which he knows or should know is contrary to such laws, ordinances, rules and regulations, and without such notice to the Owner, he shall assume full responsibility therefor and shall bear all costs attributable thereto.
- (4) In the performance of the Work, the Contractor shall comply with all applicable federal, state and local laws and regulations including those relating to workplace and employee safety. The Contractor shall notify the Owner immediately of any conditions at the place of the work which violate said laws and regulations and shall take prompt action to correct and eliminate any such violations.
- E. Project Superintendent: The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site at all times during the progress of the Work. The superintendent shall represent the Contractor and all communications given to the superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be so confirmed on written request in each case.
- F. Progress Schedule: The Contractor, immediately after being awarded the Contract, shall prepare and submit for the Owner's information an estimated progress schedule for the Work. The progress schedule shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.
- G. Liquidated Damages: It is expressly agreed between the Contractor and the Owner that the Contractor will be responsible for all damages which may arise due to the Contractor's failure to substantially complete the work within the above specified time. If the Contractor shall neglect, fail or refuse to complete the work within the specified number of days, or any extension thereof authorized by the Owner, Contractor agrees, as a part of the consideration for the execution of this Contract by the Owner, to pay the Owner the amount specified herein, not as a penalty, but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day, excluding Saturdays, Sundays and legal Holidays, that the Contractor shall be in default of Substantial completion after the date specified in the Agreement. Due to the impracticability and extreme difficulty of fixing and ascertaining the actual damages the Owner would in such event sustain, said amount is agreed to be the amount of damages which the Owner would sustain, and said amount shall be retained from time to time by the Owner from current periodic estimates. The amount of liquidated



damages shall be \$500 (five hundred dollars) per day beyond 90 days from Notice to Proceed.

- H. Protection of the Work and Owner's Property: The Contractor shall at all times safely guard the Owner's property from injury or loss in connection with this Agreement. He shall at all times safely guard and protect his own work, and that of adjacent property from damage. The Contractor shall replace or make good any such damage, loss or injury. The Contractor shall clean the work area and restore it to its original condition upon completion of the work.
- I. Quality of the Work: The Contractor shall perform the work in a good, workmanlike manner. The Contractor hereby guarantees that the entire work constructed by him under the Agreement will meet fully all requirements thereof as to quality of workmanship and materials. The Contractor hereby agrees to make at his own expense any repairs or replacements made necessary by defects in materials or workmanship supplied to him that become evident within one (1) year after the date of the final payment, and to restore to full compliance with the requirements set forth herein any part of the work constructed hereunder, which during said one (1) year period is found to be deficient with respect to any provisions of the Contract Documents. The Contractor also agrees to hold the Owner harmless from claims of any kind arising from damage due to said defects. The Contractor shall make all repairs and replacements promptly upon receipt of written orders for same from the Owner. If the Contractor fails to make the repairs and replacements promptly, the Owner may do the work and the Contractor shall be liable to the Owner for the cost thereof.
- J. Warranty: The Contractor guarantees to Owner that all materials incorporated into the work will be new unless otherwise specified or agreed. Prior to final payment, the Contractor shall deliver to the Owner all manufacturers' warranties, together with such endorsements or assignments as are necessary to ensure to the Owner the full rights and benefits of such warranties.
- K. Photographs: The contractor shall take digital photographs that are representative of the work that will not be readily visible once work is completed. Photos should be sufficient to be used as verification that the work has been satisfactorily completed. Photos to be property of the Town upon submission.
- 5. Affirmative Action/Equal Employment Opportunity
  - A. The Contractor is directed to comply with all applicable State Laws, Ordinances, Bylaws, and rules and regulations regarding affirmative action/equal employment opportunity requirements. Failure of the Contractor to comply with any such law, rule or regulation shall constitute grounds for the Owner to terminate the Agreement.
  - B. Minority and Women Workforce Participation: Pursuant to his/her obligations under the preceding section, the Contractor shall strive to achieve on this project the labor participation goals contained herein. Said participation goals shall apply in each job category on this project including but not limited to bricklayers, carpenters, cement masons, electricians, ironworkers, operating engineers and those classes of work enumerated in Section 44F of Chapter 149 of the Massachusetts General Laws. The participation goals for

this project shall be 15.3% for minorities and 6.9% for women. The participation goals, as set forth herein, shall not be construed as quotas or set-asides; rather, such participation goals will be used to measure the progress of the Commonwealth's equal opportunity, non-discrimination and affirmative action program. Additionally, the participation goals contained herein should not be seen or treated as a floor or as a ceiling for the employment of particular individuals or group of individuals.

6. Site Information Not Guaranteed; Contractor's Investigation

All information given in the Contract Documents relating to subsurface and other conditions, natural phenomena, existing pipes, and other structures is from the best sources at present available to the Owner. All such information is furnished only for the information and convenience of the Contractor and is not guaranteed.

It is agreed and understood that the Owner does not warrant or guarantee that the subsurface or other conditions, natural phenomena, existing pipes, or other structures encountered during construction will be the same as those indicated in the Contract Documents.

Contractor has familiarized himself with the nature and extent of the Contract Documents, work, locality, and with all local conditions and federal, state, and local laws, rules, ordinances, and regulations that in any manner may affect costs, progress, or performance of the work. Contractor has made, or has caused to be made, examinations, investigations, and tests and studies of such reports and related data in addition to those referred to in the paragraph above as he deems necessary for the performance of the work at the Contract Price, within the Contract Time, and in accordance with the other Terms and Conditions of the Contract Documents; and no additional examinations, tests, investigations, reports, and similar data are or will be required by the Contractor for such purposes.

Contractor has correlated the results of all such observations, examinations, investigations, tests, reports, and data with the Contract Documents. Contractor has given the Owner written notice of all conflicts, errors, or discrepancies that he has discovered in the Contract Documents, and the resolution thereof by the Owner is acceptable to the Contractor.

It is further agreed and understood that the Contractor shall not use or be entitled to use any of the information made available to him or obtained in any examination made by him in any manner as a basis of or ground for any claim or demand against the Owner, arising from or by reason of any variance which may exist between the information made available and the actual subsurface conditions or other conditions or structures actually encountered during the construction work, except as may otherwise be expressly provided for in the Contract Documents.

7. Project Architect or Engineer

There x is \_\_\_ is not an Engineer for this project who is Hesnor Engineering Associates, PLLC

8. Wage Rates

Prevailing Wage Rates as determined by the Commissioner of the Department of Labor and Workforce Development under the provisions of Massachusetts General Laws, Chapter 149,

IFB 2022-2070 DEERFIELD POLICE STATION HVAC IMPROVEMENTS

Section 26 to 27G, as amended, apply to specific elements of this project as well as the Federal Davis Bacon prevailing wage. The higher of the wages for the applicable category shall be paid. It is the responsibility of the Contractor to provide the Town with certified payrolls and to comply with all requirements of the above-cited statutes.

The schedules of prevailing wage rates are included in the Contract Documents.

9. Payments to the Contractor

Within fifteen (15) days after receipt from the Contractor of a proper and satisfactory invoice requesting payment of the lump sum amount due for completion of the project, the Owner shall have fifteen (15) days to make payment for:

- A. The work performed.
- B. Less the following retention items:
  - 1. A retention based on an estimate of the fair value of the Owner's claims against the Contractor.
  - 2. A retention for direct payments to Subcontractors, if any, based on demands for same in accordance with the provisions of Section 39F of Chapter 30 of the General Laws.
- C. Changes in the Work: No changes in the work covered by the approved Contract Documents shall be made without prior written approval of the Owner. Charges or credits for the work covered by the approved change shall be determined by one or more, or a combination of the following methods:
  - (a) Unit bid prices previously approved.
  - (b) Negotiation based on lump sum
- D. Claims for Additional Costs: If the Contractor wishes to make a claim for an increase in the Contract Sum, he shall give the Owner written notice thereof within twenty days after the occurrence of the event giving rise to such claim. This notice shall be given by the Contractor before proceeding to execute the Work, except in an emergency endangering life or property. No such claim shall be valid unless so made. Any change in the Contract Sum resulting from such claim shall be authorized by Change Order.

The Contractor hereby agrees that the Contractor shall have no claim for damages of any kind against the Town on account of any delay in the commencement or performance of the work and/or any hindrance, delay or suspension of any portion of the work including, but not limited to, any claims or damages on account of having to perform out of sequence work, claims for damages on account of loss of production or other interference with the work whether such delay is caused by the Town or otherwise, except as and to the extent expressly provided under G.L. c.30, §39O in the case of written orders by the Town. The

Contractor acknowledges that the Contractor's sole remedy for any such claim will be an extension of time as provided herein.

10. Final Payment, Effect

The acceptance of final payment by the Contractor shall constitute a waiver of all claims by the Contractor arising under the Agreement.

11. Contract Documents

The provisions of the IFB and the Contractor's Bid are incorporated herein by reference. In the event of any conflict among the Contract Documents, the Documents shall be construed according to the following priorities:

Highest Priority:	Amendments to Contract (if any)
Second Priority:	Contract
Third Priority:	Addenda to the IFB (if any)
Fourth Priority:	IFB
Fifth Priority:	Contractor's Bid.

Invitation to Bid  
Instructions to Bidders  
This Contract Form  
Bid Form  
Performance Bond  
Labor & Materials Payment Bond  
Non-Collusion Certificate  
Tax Compliance Certificate  
Clerk's Certificate of Corporate Vote  
Certificate of Insurance  
General Conditions  
Drug Free Workplace Policy  
Supplementary General Conditions, if any  
General Requirements  
Specifications and Addenda  
Contract Drawings  
Schedule of Prevailing Wages  
(Strike out any inapplicable item)

12. Terms Required By Law

This Agreement shall be considered to include all terms required to be included in it by the Massachusetts General Laws, and all other applicable laws, as though such terms were set forth in full herein.

13. Indemnification

a. To the fullest extent permitted by law, Contractor shall defend, indemnify, and save harmless the Town and its respective duly elected or appointed officials, agents and employees from and against all demands, claims, damages, liabilities, losses, costs, and expenses (including, but not limited to, reasonable attorney fees) (referred to collectively as “demands”) arising out of or resulting from any work performed pursuant to this Agreement including but not limited to any negligent acts, errors, or omissions of the Contractor, any subContractor of the Contractor, or any person directly or indirectly employed by any of them, or by a defect of a product or design supplied by the Contractor or subContractor. Such obligation shall not negate, abridge, or reduce in any way any additional indemnification rights of the Town, that otherwise may exist under statute or in law or equity.

b. The Contractor shall defend, indemnify, and hold harmless the Town from any and all demands relating to wages, overtime compensation, or other employee benefits by employees employed directly or indirectly by the Contractor for work performed in connection with the work hereunder or required by state or federal law, including but not limited to Fair Labor Standards Act and Massachusetts Prevailing Wage Law.

c. The indemnification obligations of the Contractor and subContractor shall not be limited in any way by any limitations on the amount or type of damages, compensations, or benefits payable by or for the Contractor or subContractor under any federal or state law.

d. In the event of a breach of this Agreement by the Contractor, the Contractor shall pay the Town all reasonable attorney fees, costs and other litigation expenses incurred by the Town in enforcing its rights as a result of said breach in addition to any damages for said breach.

14. Insurance

The Contractor shall purchase and maintain such insurance as will protect both the Owner and the Contractor from claims which may arise under the Agreement, including operations performed for the named insured by independent contractors and general inspection thereof by the named insured. In addition, the Contractor shall require its subcontractors to maintain such insurance. Coverage shall be provided for:

- a. claims under workers' or workmen's compensation, disability benefit and other applicable employee benefit acts;
- b. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
- c. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
- d. claims for damages insured by usual personal injury liability coverage which are sustained (1) by any person as a result of an offense directly or indirectly related to the employment of such person by the Contractor, or (2) by any other person;
- e. claims for damages, including damages to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom; and
- f. claims for damages because of bodily injury or death of any person or property

damage arising out of the ownership, maintenance or use of any motor vehicle.

- g. claims involving contractual liability applicable to the Contractor's obligations under Article 13.

The limits of liability for coverage required under the preceding paragraph shall be as Specified in the INVITATION FOR BIDS.

Except for Workmen's Compensation, all liability coverage shall name the Town as an additional insured and shall provide for 30 days prior written notice to the Town of any modification or termination of coverage provided thereby. The Contractor shall provide the Owner with appropriate certificate(s) of insurance evidencing compliance with this provision prior to the commencement of any work under this Agreement.

15. Notice

All notices required to be given hereunder shall be in writing and delivered to, or mailed first class to, the parties' respective addresses stated above. In the event that immediate notice is required, it may be given by telephone or facsimile, but shall, to the extent possible, be followed by notice in writing in the manner set forth above.

16. Termination

- a. Each party shall have the right to terminate this Agreement in the event of a failure of the other party to comply with the terms of the Agreement. Such termination shall be effective upon seven days' notice to the party in default and the failure within that time of said party to cure its default.
- b. The Owner shall have the right to terminate the Agreement without cause, upon ten (10) days' written notice to the Contractor. In the event that the Agreement is terminated pursuant to this subparagraph, the Contractor shall be reimbursed in accordance with the Contract Documents for all Work performed up to the termination date, and for all materials or equipment not incorporated in the Work, but delivered and suitably stored at the site. Payment for material or equipment stored at the site shall be conditioned upon submission by the Contractor of bills of sale or such other evidence as is satisfactory to Owner to establish the Owner's title to such material or equipment or otherwise protect the Owner's interests.

17. Miscellaneous

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

- d. Assignment: The Contractor shall not assign or transfer any of its rights, duties or obligations under this Agreement without the written approval of the Owner.
- e. Governing Law: This Agreement shall be governed by and construed in accordance with the law of the Commonwealth of Massachusetts.
- f. By its signature hereon, the Contractor certifies, under the pains and penalties of perjury, that it has complied with all laws of the Commonwealth of Massachusetts relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

AGREED:

**TOWN OF DEERFIELD, MASSACHUSETTS**  
(Owner)

By its Selectboard

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

IF REQUIRED BY THE TOWN

Approved as to Form:

By \_\_\_\_\_  
(Owner's Counsel)

In accordance with G.L. c.44, Section 31C, this is to certify that an appropriation in the amount of this contract is available therefor and that the \_\_\_\_\_ has been authorized to execute the contract and approve all requisitions and change orders.

By \_\_\_\_\_  
(Owner's Accountant)

\_\_\_\_\_ (Name)



**CONTRACTOR:** \_\_\_\_\_

By \_\_\_\_\_

\_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(City and State)

CERTIFICATE OF VOTE  
(to be filed if Contractor is a Corporation)

I, \_\_\_\_\_, hereby certify that I am the duly qualified  
(Secretary of the Corporation)

and acting Secretary of \_\_\_\_\_ and I further certify that a meeting of the  
(Name of Corporation)  
Directors of said Company, duly called and held on \_\_\_\_\_, at which  
(Date of Meeting)

all Directors were present and voting, the following vote was unanimously passed:

VOTED: To authorize and empower

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Anyone acting singly, to execute Forms of General Bid, Contracts or Bonds on behalf of the Corporation.

I further certify that the above vote is still in effect and has not been changed or modified in any respect.

By: \_\_\_\_\_  
(Secretary of Corporation)

A True Copy:

Attest: \_\_\_\_\_  
(Notary Public)

My Commission Expires: \_\_\_\_\_  
(Date)

PAYMENT BOND (required for Contracts \$25,000 or more only)

KNOW ALL MEN BY THESE PRESENTS: That we \_\_\_\_\_

\_\_\_\_\_ a \_\_\_\_\_  
(Name of Contractor) (Corporation, Partnership, Joint Venture or Individual)

hereinafter called "Principal" and \_\_\_\_\_ of \_\_\_\_\_,  
(Surety)

State of \_\_\_\_\_ hereinafter called the "Surety" and licensed by the State  
(City and State)

Division of Insurance to do business under the laws of the Commonwealth of Massachusetts, are held and firmly bound to the City/Town of \_\_\_\_\_, Massachusetts, hereinafter called "Owner", in the penal sum of \_\_\_\_\_ Dollars

(\$\_\_\_\_\_) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, the Principal entered into a certain contract with the Owner, dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, for the construction described as follows:

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the prosecution of the work provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such work, and all insurance premiums on said work, and for all labor, performed in such work whether by subcontractor or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of this contract or to the work or to the specifications.

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in \_\_\_\_ ( ) counterparts, each one of which shall be deemed an original, this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

ATTEST:

_____	By	_____ Surety
		_____ (Attorney-in-Fact)
		_____ (Address-Zip Code)
_____ Witness as to Surety	(SEAL)	
_____		
		(Address-Zip Code)

_____ Company Name	By	_____ Contractor's Authorized Signatory
		_____ (Address-Zip Code)

NOTE:      Date of Bond must not be prior to date of Contract.    If Contractor is a Partnership, all partners should execute Bond.

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That we \_\_\_\_\_  
(Name of Contractor)

a \_\_\_\_\_ hereinafter called "Principal" and  
(Corporation, Partnership, Joint Venture or Individual)

\_\_\_\_\_ of \_\_\_\_\_, State of \_\_\_\_\_  
(Surety) (City & State)

\_\_\_\_\_ hereinafter called the "Surety" and licensed by the State  
Division of Insurance to do business under the laws of the Commonwealth of Massachusetts, are  
held and firmly bound to the Town of \_\_\_\_\_,  
Massachusetts, hereinafter called "Owner", in the penal sum of

\_\_\_\_\_ Dollars  
(\$ \_\_\_\_\_) in lawful money of the United States, for the payment of which  
sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and  
successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, the Principal entered  
into a certain contract with the Owner, dated the \_\_\_\_\_ day of \_\_\_\_\_,  
20\_\_ (the "Construction Contract"), for the construction described as follows: \_\_\_\_\_  
\_\_\_\_\_.

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties,  
all the undertakings, covenants, terms, conditions, and agreements of the Construction Contract  
during the original term thereof, and any extensions thereof which may be granted by the Owner,  
with or without notice to the Surety, and if he shall satisfy all claims and demands incurred under  
the Construction Contract, and shall fully indemnify and save harmless the Owner from all costs  
and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the  
Owner all outlay and expense which the Owner may incur in making good any default, then this  
obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the Surety's obligation under this Bond shall arise after (1)  
the Owner has declared the Principal in default of the Construction Contract or any provision  
thereof or (2) has declared that the Principal has failed, or is otherwise unable or unwilling, to  
execute the work consistent with, and in conformance to, the Construction Contract (collectively  
referred to as a "Contractor Default"). The determination of a Contractor Default shall be made  
solely by the Owner. The Owner need not terminate the Construction Contract to declare a  
Contractor Default or to invoke its rights under this Bond.

When the Surety's obligation under this Bond arises, the Surety, at its sole expense and at the consent and election of the Owner, shall promptly take one of the following steps: (1) arrange for the Principal to perform and complete the work of the Construction Contract; (2) arrange for a contractor other than the Principal to perform and complete the work of the Construction Contract; (3) reimburse the Owner, in a manner and at such time as the Owner shall decide, for all costs and expenses incurred by the Owner in performing and completing the work of the Construction Contract. Surety will keep Owner reasonably informed of the progress, status and results of any investigation of any claim of the Owner.

If the Surety does not proceed as provided in this Bond with due diligence and all deliberate speed, the Surety shall be deemed to be in default of this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner.

After the Surety's obligation under this Bond arises, the Surety is obligated, to the limit of the amounts of this Bond, for (1) the correction of defective work and completion of the Construction Contract; (2) additional design, professional services, and legal costs, including attorneys' fees, resulting from the Contractor Default or from the default of the Surety under this Bond; (3) any additional work beyond the Construction Contract made necessary by the Contractor Default or default of the Surety under this Bond; (4) indemnification obligation of the Principal, if any, as provided in the Construction Contract; and (5) liquidated damages as provided in the Construction Contract, or if none are so specified, actual and foreseeable consequential damages resulting from the Contractor Default or default of the Surety under this Bond.

Any proceeding, legal or equitable, under this Bond shall be instituted in any court of competent jurisdiction in the Commonwealth of Massachusetts.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Construction Contract or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Construction Contract or to the work or to the specifications.

IN WITNESS WHEREOF, this instrument is executed in \_\_\_\_\_ ( ) counterparts, each one of which shall be deemed an original, this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

ATTEST:

_____	By	_____
(Principal Secretary)		Principal
		_____
		_____
		_____
		(Address-Zip Code)

\_\_\_\_\_ (SEAL)  
Witness as to Principal  
\_\_\_\_\_

\_\_\_\_\_  
(Address-Zip Code)

ATTEST:

_____	By	_____
		Surety
		_____
		(Attorney-in-Fact)
		_____
		_____
		(Address-Zip Code)

\_\_\_\_\_ (SEAL)  
Witness as to Surety  
\_\_\_\_\_

\_\_\_\_\_  
(Address-Zip Code)

NOTE:      Date of Bond must not be prior to date of Contract.      If Contractor is a Partnership, all partners should execute Bond.

**CERTIFICATIONS REQUIRED BY LAW  
FOR PUBLIC CONSTRUCTION CONTRACTS**

**You must COMPLETE and SIGN the following certifications. You must also print, at the bottom of this page, the name of the contractor for whom these certifications are submitted.**

**TAX COMPLIANCE**

Pursuant to Chapter 62C of the Massachusetts General Laws, Section 49A(b), I, the undersigned, authorized signatory for the below named contractor, do hereby certify under the pains and penalties of perjury that said contractor has complied with all laws of the Commonwealth of Massachusetts relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

---

**NON-COLLUSION**

The undersigned 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.

---

**PUBLIC CONTRACTOR DEBARMENT**

The undersigned certifies under penalty of perjury that the below named contractor 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 including the FEDERAL EXCLUSION LIST (SAMI).

---

**OSHA TRAINING**

Pursuant to G.L. c. 30, §39S, the Contractor hereby certifies under penalties of perjury as follows:

- (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) 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 they shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and
- (3) 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.

**COMPLETE AND SIGN BELOW:**

\_\_\_\_\_  
Authorized Person's Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name & Title of Signatory

\_\_\_\_\_  
Name of Contractor



Incorporation of Applicable Provisions of the  
Massachusetts General Laws and Federal Code

Certain provisions of the Federal Code 2 CFR § 200.318 and Massachusetts General Laws are applicable to Construction contracts including, but not limited to, those contained in Chapter 30 and Chapter 149. All applicable provisions of the Massachusetts General Laws are incorporated into the Contract as if fully set forth herein, and shall prevail over any conflicting provisions of the General or Supplemental General Conditions.

### **Certification of Drug-Free Workplace**

The CONTRACTOR certifies that it will or will continue to provide a drug-free workplace by:

1. Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession or use of a controlled substance is prohibited in the contractor's workplace and specifying the actions that will be taken against employees for violation of such prohibition;
2. Establishing an ongoing drug-free awareness program to inform employees about-
  - (a) The dangers of drug abuse in the workplace;
  - (b) The contractor's policy of maintaining a drug-free workplace;
  - (c) Any available drug counseling, rehabilitation and employee assistance programs and;
  - (d) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;
3. Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph 1;
4. Notifying the employee in the statement required by paragraph 1 that, as a condition of employment under the grant, the employee will-
  - (a) Abide by the terms of the statement and;
  - (b) Notify the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace no later than five calendar days after such conviction;
5. Notifying the Town in writing, within ten calendar days after receiving notice under sub-paragraph 4(b) from an employee or otherwise receiving actual notice of such conviction. Employers of convicted employees must provide notice, including position title, to every grant officer or other designee on whose grant activity the convicted employee was working, unless the Town has designated a central point for the receipt of such notices. Notice shall include the identification number(s) of each affected grant;
6. Taking one of the following actions, within 30 calendar days of receiving notice under subparagraph 4(b), with respect to any employee who is convicted-
  - (a) Taking appropriate personnel action against such an employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973, as amended or;
  - (b) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State or local health, law enforcement or other appropriate agency;
7. Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs 1, 2, 3, 4, 5 and 6.

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

Signature: \_\_\_\_\_

## EXHIBIT 1

### PREVAILING WAGE SCHEDULES AND REPORTING DOCUMENTS

MA Prevailing Wage

Davis Bacon Federal Wage Schedule



THE COMMONWEALTH OF MASSACHUSETTS  
DEPARTMENT OF LABOR  
**DIVISION OF OCCUPATIONAL SAFETY**  
PREVAILING WAGE PROGRAM  
[www.mass.gov/dos/pw](http://www.mass.gov/dos/pw)

**The Massachusetts Prevailing Wage Law**  
**M.G.L. c. 149, §§26-27**

**NOTICE TO AWARDING AUTHORITIES**

The enclosed wage schedule applies only to the specific project listed at the top of the schedule, and these rates will remain in effect for the duration of the project.

You should request an updated wage schedule from the Division of Occupational Safety if you have not opened bids or selected a contractor within 90 days of the date of issuance of the enclosed wage schedule.

The wage schedule shall be incorporated in any advertisement or call for bids for the project for which it has been issued.

Once a contractor has been selected by the awarding authority, the wage schedule shall be made a part of the contract for that project.

**NOTICE TO CONTRACTORS**

The enclosed wage schedule must be posted in a conspicuous place at the work site during the life of the project.

The wages listed on the enclosed wage schedule must be paid to employees on public works projects regardless of whether they are employed by the prime contractor, a filed sub-bidder, or any sub-contractor.

The enclosed wage schedule applies to all phases of the project, including the final clean-up. Contractors whose only role is to perform final clean-up must pay their employees according to this wage schedule.

All apprentices must be registered with the Massachusetts Division of Apprenticeship Training (DAT) in order to be paid at the lower apprentice rates. All apprentices must keep his/her apprentice identification card on his/her person during all work hours. If a worker is not registered with DAT, they must be paid the "total rate" listed on the wage schedule regardless of experience or skill level. For further information, please call 617-626-5409, or write to DAT, 19 Staniford Street, Floor 1, P.O. Box 146759, Boston, MA 02114.

## WEEKLY PAYROLL RECORDS REPORT & STATEMENT OF COMPLIANCE

In accordance with Massachusetts General Law c. 149, §27B, a true and accurate record must be kept of all persons employed on the public works project for which the enclosed rates have been provided. A Payroll Form has been printed on the reverse of this page and includes all the information required to be kept by law. Every contractor or subcontractor is required to keep these records and preserve them for a period of three years from the date of completion of the contract.

In addition, every contractor and subcontractor is required to submit a copy of their weekly payroll records to the awarding authority. This is required to be done on a weekly basis. Once collected, the awarding authority is also required to preserve those records for three years from the date of completion of the project.

Each such contractor or subcontractor shall furnish to the awarding authority directly within 15 days after completion of its portion of the work, a statement, executed by the contractor, subcontractor or by any authorized officer thereof who supervised the payment of wages, this form.

### STATEMENT OF COMPLIANCE

\_\_\_\_\_, 20\_\_\_\_

I, \_\_\_\_\_, \_\_\_\_\_  
(Name of signatory party) (Title)

do hereby state:

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

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

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

Signature \_\_\_\_\_

Title \_\_\_\_\_

09/11

# MASSACHUSETTS WEEKLY CERTIFIED PAYROLL REPORT FORM



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

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

For all apprentices performing work during the reporting period, attach a copy of the apprentice identification card issued by the Massachusetts Department of Labor Standards / Division of Apprentice Standards. No apprentices are identified above ☐

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



MAURA HEALEY  
Governor

KIM DRISCOLL  
Lt. Governor

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

**Prevailing Wage Rates**

**As determined by the Director under the provisions of the  
Massachusetts General Laws, Chapter 149, Sections 26 to 27H**

LAUREN JONES  
Secretary

MICHAEL FLANAGAN  
Director

**Awarding Authority:** Town of Deerfield

**Contract Number:** 2023-2070

**City/Town:** DEERFIELD

**Description of Work:** HVAC upgrades

**Job Location:** 8 Conway St, South Deerfield, MA

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**Information about Prevailing Wage Schedules for Awarding Authorities and Contractors**

- **The wage rates will remain in effect for the duration of the project, except in the case of multi-year public construction projects. For construction projects lasting longer than one year, awarding authorities must request an updated wage schedule no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor.** For multi-year CM AT RISK projects, the awarding authority must request an annual update no later than two weeks before the anniversary date, determined as the earlier of: (a) the execution date of the GMP Amendment, or (b) the execution date of the first amendment to permit procurement of construction services. The annual update requirement is not applicable to 27F "rental of equipment" contracts. **The updated wage schedule must be provided to all contractors, including general and sub-contractors, working on the construction project.**
- This wage schedule applies only to the specific project referenced at the top of this page and uniquely identified by the "Wage Request Number" on all pages of this schedule.
- An Awarding Authority must request an updated wage schedule if it has not opened bids or selected a contractor within 90 days of the date of issuance of the wage schedule. For CM AT RISK projects (bid pursuant to G.L. c.149A), the earlier of: (a) the execution date of the GMP Amendment, or (b) the bid for the first construction scope of work must be within 90-days of the wage schedule issuance date.
- The wage schedule shall be incorporated in any advertisement or call for bids for the project as required by M.G.L. c. 149, § 27. The wage schedule shall be made a part of the contract awarded for the project. The wage schedule must be posted in a conspicuous place at the work site for the life of the project in accordance with M.G.L. c. 149 § 27. The wages listed on the wage schedule must be paid to employees performing construction work on the project whether they are employed by the prime contractor, a filed sub-bidder, or a sub-contractor.
- Apprentices working on the project are required to be registered with the Massachusetts Division of Apprentice Standards (DAS). Apprentices must keep their apprentice identification card on their persons during all work hours on the project. An apprentice registered with DAS may be paid the lower apprentice wage rate at the applicable step as provided on the prevailing wage schedule. **Any apprentice not registered with DAS regardless of whether they are registered with another federal, state, local, or private agency must be paid the journeyworker's rate.**
- Every contractor or subcontractor working on the construction project must submit weekly payroll reports and a Statement of Compliance directly to the awarding authority by mail or email and keep them on file for three years. Each weekly payroll report must contain: the employee's name, address, occupational classification, hours worked, and wages paid. Do not submit weekly payroll reports to DLS. For a sample payroll reporting form go to <http://www.mass.gov/dols/pw>.
- Contractors with questions about the wage rates or classifications included on the wage schedule have an affirmative obligation to inquire with DLS at (617) 626-6953.
- Contractors must obtain the wage schedules from awarding authorities. Failure of a contractor or subcontractor to pay the prevailing wage rates listed on the wage schedule to all employees who perform construction work on the project is a violation of the law and subjects the contractor or subcontractor to civil and criminal penalties.
- Employees not receiving the prevailing wage rate set forth on the wage schedule may file a complaint with the Fair Labor Division of the office of the Attorney General at (617) 727-3465.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
<b>Construction</b>						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$35.95	\$13.41	\$16.01	\$0.00	\$65.37
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.02	\$13.41	\$16.01	\$0.00	\$65.44
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.14	\$13.41	\$16.01	\$0.00	\$65.56
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 3)</i>	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
AIR TRACK OPERATOR <i>LABORERS - ZONE 3 (BUILDING &amp; SITE)</i>	12/01/2022	\$34.38	\$9.10	\$16.19	\$0.00	\$59.67
	06/01/2023	\$35.00	\$9.10	\$16.19	\$0.00	\$60.29
	12/01/2023	\$35.63	\$9.10	\$16.19	\$0.00	\$60.92
For apprentice rates see "Apprentice- LABORER"						
AIR TRACK OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY &amp; HIGHWAY)</i>	12/01/2022	\$33.75	\$9.35	\$14.41	\$0.00	\$57.51
	06/01/2023	\$34.37	\$9.35	\$14.41	\$0.00	\$58.13
	12/01/2023	\$35.00	\$9.35	\$14.41	\$0.00	\$58.76
	06/01/2024	\$36.20	\$9.35	\$14.41	\$0.00	\$59.96
	12/01/2024	\$37.40	\$9.35	\$14.41	\$0.00	\$61.16
	06/01/2025	\$38.65	\$9.35	\$14.41	\$0.00	\$62.41
	12/01/2025	\$39.89	\$9.35	\$14.41	\$0.00	\$63.65
	06/01/2026	\$41.19	\$9.35	\$14.41	\$0.00	\$64.95
	12/01/2026	\$42.48	\$9.35	\$14.41	\$0.00	\$66.24
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASBESTOS WORKER (PIPES & TANKS) <i>HEAT &amp; FROST INSULATORS LOCAL 6 (SPRINGFIELD)</i>	12/01/2020	\$34.29	\$12.80	\$8.95	\$0.00	\$56.04
ASPHALT RAKER <i>LABORERS - ZONE 3 (BUILDING &amp; SITE)</i>	12/01/2022	\$33.88	\$9.10	\$16.19	\$0.00	\$59.17
	06/01/2023	\$34.50	\$9.10	\$16.19	\$0.00	\$59.79
	12/01/2023	\$35.13	\$9.10	\$16.19	\$0.00	\$60.42
For apprentice rates see "Apprentice- LABORER"						
ASPHALT RAKER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY &amp; HIGHWAY)</i>	12/01/2022	\$33.25	\$9.35	\$14.41	\$0.00	\$57.01
	06/01/2023	\$33.87	\$9.35	\$14.41	\$0.00	\$57.63
	12/01/2023	\$34.50	\$9.35	\$14.41	\$0.00	\$58.26
	06/01/2024	\$35.70	\$9.35	\$14.41	\$0.00	\$59.46
	12/01/2024	\$36.90	\$9.35	\$14.41	\$0.00	\$60.66
	06/01/2025	\$38.15	\$9.35	\$14.41	\$0.00	\$61.91
	12/01/2025	\$39.39	\$9.35	\$14.41	\$0.00	\$63.15
	06/01/2026	\$40.69	\$9.35	\$14.41	\$0.00	\$64.45
	12/01/2026	\$41.98	\$9.35	\$14.41	\$0.00	\$65.74
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
AUTOMATIC GRADER-EXCAVATOR (RECLAIMER) <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2022	\$38.21	\$13.38	\$15.00	\$0.00	\$66.59
	06/01/2023	\$39.16	\$13.38	\$15.00	\$0.00	\$67.54
	12/01/2023	\$40.11	\$13.38	\$15.00	\$0.00	\$68.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER OPERATOR <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2022	\$38.21	\$13.38	\$15.00	\$0.00	\$66.59
	06/01/2023	\$39.16	\$13.38	\$15.00	\$0.00	\$67.54
	12/01/2023	\$40.11	\$13.38	\$15.00	\$0.00	\$68.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						



Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 3 (BUILDING &amp; SITE)</i>	12/01/2022	\$33.88	\$9.10	\$16.19	\$0.00	\$59.17
	06/01/2023	\$34.50	\$9.10	\$16.19	\$0.00	\$59.79
	12/01/2023	\$35.13	\$9.10	\$16.19	\$0.00	\$60.42
For apprentice rates see "Apprentice- LABORER"						
BATCH/CEMENT PLANT - ON SITE <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2022	\$37.68	\$13.38	\$15.00	\$0.00	\$66.06
	06/01/2023	\$38.63	\$13.38	\$15.00	\$0.00	\$67.01
	12/01/2023	\$39.58	\$13.38	\$15.00	\$0.00	\$67.96
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 3 (BUILDING &amp; SITE)</i>	12/01/2022	\$34.38	\$9.10	\$16.19	\$0.00	\$59.67
	06/01/2023	\$35.00	\$9.10	\$16.19	\$0.00	\$60.29
	12/01/2023	\$35.63	\$9.10	\$16.19	\$0.00	\$60.92
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY &amp; HIGHWAY)</i>	12/01/2022	\$33.75	\$9.35	\$14.41	\$0.00	\$57.51
	06/01/2023	\$34.37	\$9.35	\$14.41	\$0.00	\$58.13
	12/01/2023	\$35.00	\$9.35	\$14.41	\$0.00	\$58.76
	06/01/2024	\$36.20	\$9.35	\$14.41	\$0.00	\$59.96
	12/01/2024	\$37.40	\$9.35	\$14.41	\$0.00	\$61.16
	06/01/2025	\$38.65	\$9.35	\$14.41	\$0.00	\$62.41
	12/01/2025	\$39.89	\$9.35	\$14.41	\$0.00	\$63.65
	06/01/2026	\$41.19	\$9.35	\$14.41	\$0.00	\$64.95
	12/01/2026	\$42.48	\$9.35	\$14.41	\$0.00	\$66.24
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2023	\$47.37	\$7.07	\$20.31	\$0.00	\$74.75
	01/01/2024	\$48.12	\$7.07	\$20.60	\$0.00	\$75.79

Apprentice - BOILERMAKER - Local 29

Effective Date - 01/01/2023

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

Effective Date - 01/01/2024

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	\$31.28	\$7.07	\$13.22	\$0.00	\$51.57
2	65	\$31.28	\$7.07	\$13.22	\$0.00	\$51.57
3	70	\$33.68	\$7.07	\$14.23	\$0.00	\$54.98
4	75	\$36.09	\$7.07	\$15.24	\$0.00	\$58.40
5	80	\$38.50	\$7.07	\$16.25	\$0.00	\$61.82
6	85	\$40.90	\$7.07	\$17.28	\$0.00	\$65.25
7	90	\$43.31	\$7.07	\$18.28	\$0.00	\$68.66
8	95	\$45.71	\$7.07	\$19.32	\$0.00	\$72.10

Notes:

Apprentice to Journeyworker Ratio:1:4

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) BRICKLAYERS LOCAL 3 (SPRINGFIELD/PITTSFIELD)	02/01/2023	\$48.76	\$11.49	\$20.37	\$0.00	\$80.62
	08/01/2023	\$50.81	\$11.49	\$20.37	\$0.00	\$82.67
	02/01/2024	\$52.06	\$11.49	\$20.37	\$0.00	\$83.92
	08/01/2024	\$53.31	\$11.49	\$20.37	\$0.00	\$85.17
	02/01/2025	\$54.61	\$11.49	\$20.37	\$0.00	\$86.47
	08/01/2025	\$56.76	\$11.49	\$20.37	\$0.00	\$88.62
	02/01/2026	\$58.11	\$11.49	\$20.37	\$0.00	\$89.97
	08/01/2026	\$60.31	\$11.49	\$20.37	\$0.00	\$92.17
	02/01/2027	\$61.71	\$11.49	\$20.37	\$0.00	\$93.57

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

**Effective Date - 02/01/2023**

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

**Effective Date - 08/01/2023**

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

**Notes:**

**Apprentice to Journeyworker Ratio:1:5**

BULLDOZER/POWER SHOVEL/TREE SHREDDER	12/01/2022	\$38.21	\$13.38	\$15.00	\$0.00	\$66.59
/CLAM SHELL OPERATING	06/01/2023	\$39.16	\$13.38	\$15.00	\$0.00	\$67.54
ENGINEERS LOCAL 98	12/01/2023	\$40.11	\$13.38	\$15.00	\$0.00	\$68.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
CAISSON & UNDERPINNING BOTTOM MAN	12/01/2022	\$43.73	\$9.35	\$17.97	\$0.00	\$71.05
LABORERS - FOUNDATION AND MARINE	06/01/2023	\$44.73	\$9.35	\$17.97	\$0.00	\$72.05
	12/01/2023	\$45.98	\$9.35	\$17.97	\$0.00	\$73.30
	06/01/2024	\$47.46	\$9.35	\$17.97	\$0.00	\$74.78
	12/01/2024	\$48.93	\$9.35	\$17.97	\$0.00	\$76.25
	06/01/2025	\$50.43	\$9.35	\$17.97	\$0.00	\$77.75
	12/01/2025	\$51.93	\$9.35	\$17.97	\$0.00	\$79.25
	06/01/2026	\$53.48	\$9.35	\$17.97	\$0.00	\$80.80
	12/01/2026	\$54.98	\$9.35	\$17.97	\$0.00	\$82.30
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING LABORER	12/01/2022	\$42.58	\$9.35	\$17.97	\$0.00	\$69.90
LABORERS - FOUNDATION AND MARINE	06/01/2023	\$43.58	\$9.35	\$17.97	\$0.00	\$70.90
	12/01/2023	\$44.83	\$9.35	\$17.97	\$0.00	\$72.15
	06/01/2024	\$46.31	\$9.35	\$17.97	\$0.00	\$73.63
	12/01/2024	\$47.78	\$9.35	\$17.97	\$0.00	\$75.10
	06/01/2025	\$49.28	\$9.35	\$17.97	\$0.00	\$76.60
	12/01/2025	\$50.78	\$9.35	\$17.97	\$0.00	\$78.10
	06/01/2026	\$52.33	\$9.35	\$17.97	\$0.00	\$79.65
	12/01/2026	\$53.83	\$9.35	\$17.97	\$0.00	\$81.15
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CAISSON & UNDERPINNING TOP MAN <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2022	\$42.58	\$9.35	\$17.97	\$0.00	\$69.90
	06/01/2023	\$43.58	\$9.35	\$17.97	\$0.00	\$70.90
	12/01/2023	\$44.83	\$9.35	\$17.97	\$0.00	\$72.15
	06/01/2024	\$46.31	\$9.35	\$17.97	\$0.00	\$73.63
	12/01/2024	\$47.78	\$9.35	\$17.97	\$0.00	\$75.10
	06/01/2025	\$49.28	\$9.35	\$17.97	\$0.00	\$76.60
	12/01/2025	\$50.78	\$9.35	\$17.97	\$0.00	\$78.10
	06/01/2026	\$52.33	\$9.35	\$17.97	\$0.00	\$79.65
	12/01/2026	\$53.83	\$9.35	\$17.97	\$0.00	\$81.15
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR <i>LABORERS - ZONE 3 (BUILDING &amp; SITE)</i>	12/01/2022	\$33.88	\$9.10	\$16.19	\$0.00	\$59.17
	06/01/2023	\$34.50	\$9.10	\$16.19	\$0.00	\$59.79
	12/01/2023	\$35.13	\$9.10	\$16.19	\$0.00	\$60.42
For apprentice rates see "Apprentice- LABORER"						
CARPENTER <i>CARPENTERS LOCAL 336 - HAMPDEN HAMPSHIRE FRANKLIN</i>	09/01/2022	\$39.82	\$7.16	\$18.15	\$0.00	\$65.13
	03/01/2023	\$40.32	\$7.16	\$18.15	\$0.00	\$65.63

**Apprentice - CARPENTER - Local 336 Hampden Hampshire Franklin**

**Effective Date - 09/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.91	\$7.16	\$1.38	\$0.00	\$28.45
2	60	\$23.89	\$7.16	\$1.38	\$0.00	\$32.43
3	70	\$27.87	\$7.16	\$13.95	\$0.00	\$48.98
4	75	\$29.87	\$7.16	\$13.95	\$0.00	\$50.98
5	80	\$31.86	\$7.16	\$15.35	\$0.00	\$54.37
6	80	\$31.86	\$7.16	\$15.35	\$0.00	\$54.37
7	90	\$35.84	\$7.16	\$16.75	\$0.00	\$59.75
8	90	\$35.84	\$7.16	\$16.75	\$0.00	\$59.75

**Effective Date - 03/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.16	\$7.16	\$1.38	\$0.00	\$28.70
2	60	\$24.19	\$7.16	\$1.38	\$0.00	\$32.73
3	70	\$28.22	\$7.16	\$13.95	\$0.00	\$49.33
4	75	\$30.24	\$7.16	\$13.95	\$0.00	\$51.35
5	80	\$32.26	\$7.16	\$15.35	\$0.00	\$54.77
6	80	\$32.26	\$7.16	\$15.35	\$0.00	\$54.77
7	90	\$36.29	\$7.16	\$16.75	\$0.00	\$60.20
8	90	\$36.29	\$7.16	\$16.75	\$0.00	\$60.20

**Notes:**

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

**Apprentice to Journeyworker Ratio:1:5**

CARPENTER WOOD FRAME <i>CARPENTERS-ZONE 3 (Wood Frame)</i>	04/01/2022	\$23.66	\$7.21	\$4.80	\$0.00	\$35.67
	04/01/2023	\$24.16	\$7.21	\$4.80	\$0.00	\$36.17

Classification	Effective Date		Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
All Aspects of New Wood Frame Work							
Apprentice - CARPENTER (Wood Frame) - Zone 3							
Effective Date - 04/01/2022							
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate	
1	60	\$14.20	\$7.21	\$0.00	\$0.00	\$21.41	
2	60	\$14.20	\$7.21	\$0.00	\$0.00	\$21.41	
3	65	\$15.38	\$7.21	\$0.00	\$0.00	\$22.59	
4	70	\$16.56	\$7.21	\$0.00	\$0.00	\$23.77	
5	75	\$17.75	\$7.21	\$3.80	\$0.00	\$28.76	
6	80	\$18.93	\$7.21	\$3.80	\$0.00	\$29.94	
7	85	\$20.11	\$7.21	\$3.80	\$0.00	\$31.12	
8	90	\$21.29	\$7.21	\$3.80	\$0.00	\$32.30	
Effective Date - 04/01/2023							
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate	
1	60	\$14.50	\$7.21	\$0.00	\$0.00	\$21.71	
2	60	\$14.50	\$7.21	\$0.00	\$0.00	\$21.71	
3	65	\$15.70	\$7.21	\$0.00	\$0.00	\$22.91	
4	70	\$16.91	\$7.21	\$0.00	\$0.00	\$24.12	
5	75	\$18.12	\$7.21	\$3.80	\$0.00	\$29.13	
6	80	\$19.33	\$7.21	\$3.80	\$0.00	\$30.34	
7	85	\$20.54	\$7.21	\$3.80	\$0.00	\$31.55	
8	90	\$21.74	\$7.21	\$3.80	\$0.00	\$32.75	
Notes:							
% Indentured After 10/1/17; 45/45/55/55/70/70/80/80							
Step 1&2 \$17.86/ 3&4 \$20.22/ 5&6 \$27.57/ 7&8 \$29.94							
Apprentice to Journeyworker Ratio:1:5							
CEMENT MASONRY/PLASTERING		01/01/2023	\$44.81	\$12.70	\$17.97	\$0.87	\$76.35
BRICKLAYERS LOCAL 3 (SPRINGFIELD/PITTSFIELD)		07/01/2023	\$45.82	\$12.70	\$17.97	\$0.87	\$77.36
		01/01/2024	\$46.83	\$12.70	\$17.97	\$0.87	\$78.37

**Apprentice - CEMENT MASONRY/PLASTERING - Springfield/Pittsfield**

**Effective Date - 01/01/2023**

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

**Effective Date - 07/01/2023**

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

**Notes:**

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

**Apprentice to Journeyworker Ratio:1:3**

CHAIN SAW OPERATOR	12/01/2022	\$33.88	\$9.10	\$16.19	\$0.00	\$59.17
LABORERS - ZONE 3 (BUILDING & SITE)	06/01/2023	\$34.50	\$9.10	\$16.19	\$0.00	\$59.79
	12/01/2023	\$35.13	\$9.10	\$16.19	\$0.00	\$60.42

For apprentice rates see "Apprentice- LABORER"

COMPRESSOR OPERATOR	12/01/2022	\$37.68	\$13.38	\$15.00	\$0.00	\$66.06
OPERATING ENGINEERS LOCAL 98	06/01/2023	\$38.63	\$13.38	\$15.00	\$0.00	\$67.01
	12/01/2023	\$39.58	\$13.38	\$15.00	\$0.00	\$67.96

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

CRANE OPERATOR	12/01/2022	\$41.71	\$13.38	\$15.00	\$0.00	\$70.09
OPERATING ENGINEERS LOCAL 98	06/01/2023	\$42.66	\$13.38	\$15.00	\$0.00	\$71.04
	12/01/2023	\$43.61	\$13.38	\$15.00	\$0.00	\$71.99

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

DELEADER (BRIDGE)	01/01/2023	\$56.06	\$8.65	\$23.05	\$0.00	\$87.76
PAINTERS LOCAL 35 - ZONE 3	07/01/2023	\$57.26	\$8.65	\$23.05	\$0.00	\$88.96
	01/01/2024	\$58.46	\$8.65	\$23.05	\$0.00	\$90.16
	07/01/2024	\$59.66	\$8.65	\$23.05	\$0.00	\$91.36
	01/01/2025	\$60.86	\$8.65	\$23.05	\$0.00	\$92.56

**Apprentice - PAINTER Local 35 - BRIDGES/TANKS**

**Effective Date - 01/01/2023**

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

**Effective Date - 07/01/2023**

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

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

DEMO: ADZEMAN	12/01/2022	\$43.33	\$9.10	\$17.57	\$0.00	\$70.00
LABORERS - ZONE 3 (BUILDING & SITE)	06/01/2023	\$44.33	\$9.10	\$17.57	\$0.00	\$71.00
	12/01/2023	\$45.58	\$9.10	\$17.57	\$0.00	\$72.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: BACKHOE/LOADER/HAMMER OPERATOR	12/01/2022	\$44.33	\$9.10	\$17.57	\$0.00	\$71.00
LABORERS - ZONE 3 (BUILDING & SITE)	06/01/2023	\$45.33	\$9.10	\$17.57	\$0.00	\$72.00
	12/01/2023	\$46.58	\$9.10	\$17.57	\$0.00	\$73.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: BURNERS	12/01/2022	\$44.08	\$9.10	\$17.57	\$0.00	\$70.75
LABORERS - ZONE 3 (BUILDING & SITE)	06/01/2023	\$45.08	\$9.10	\$17.57	\$0.00	\$71.75
	12/01/2023	\$46.33	\$9.10	\$17.57	\$0.00	\$73.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER	12/01/2022	\$44.33	\$9.10	\$17.57	\$0.00	\$71.00
LABORERS - ZONE 3 (BUILDING & SITE)	06/01/2023	\$45.33	\$9.10	\$17.57	\$0.00	\$72.00
	12/01/2023	\$46.58	\$9.10	\$17.57	\$0.00	\$73.25
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DEMO: JACKHAMMER OPERATOR <i>LABORERS - ZONE 3 (BUILDING &amp; SITE)</i>	12/01/2022	\$44.08	\$9.10	\$17.57	\$0.00	\$70.75
	06/01/2023	\$45.08	\$9.10	\$17.57	\$0.00	\$71.75
	12/01/2023	\$46.33	\$9.10	\$17.57	\$0.00	\$73.00
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER <i>LABORERS - ZONE 3 (BUILDING &amp; SITE)</i>	12/01/2022	\$43.33	\$9.10	\$17.57	\$0.00	\$70.00
	06/01/2023	\$44.33	\$9.10	\$17.57	\$0.00	\$71.00
	12/01/2023	\$45.58	\$9.10	\$17.57	\$0.00	\$72.25
For apprentice rates see "Apprentice- LABORER"						
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 3)</i>	08/01/2020	\$68.70	\$9.40	\$23.12	\$0.00	\$101.22
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 3)</i>	08/01/2020	\$49.07	\$9.40	\$23.12	\$0.00	\$81.59
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 3)</i>	08/01/2020	\$73.60	\$9.40	\$23.12	\$0.00	\$106.12
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 3)</i>	08/01/2020	\$103.05	\$9.40	\$23.12	\$0.00	\$135.57
For apprentice rates see "Apprentice- PILE DRIVER"						
DRAWBRIDGE OPERATOR (Construction) <i>DRAWBRIDGE - SEIU LOCAL 888</i>	07/01/2020	\$26.77	\$6.67	\$3.93	\$0.16	\$37.53
ELECTRICIAN (Including Core Drilling) <i>ELECTRICIANS LOCAL 7</i>	01/01/2023	\$47.01	\$12.50	\$13.96	\$0.00	\$73.47

**Apprentice - ELECTRICIAN - Local 7**

**Effective Date -** 01/01/2023

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

**Notes:**

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

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

ELEVATOR CONSTRUCTOR <i>ELEVATOR CONSTRUCTORS LOCAL 41</i>	01/01/2022	\$58.62	\$16.03	\$20.21	\$0.00	\$94.86
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Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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**Apprentice - ELEVATOR CONSTRUCTOR - Local 41**

**Effective Date -** 01/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$29.31	\$16.03	\$0.00	\$0.00	\$45.34
2	55	\$32.24	\$16.03	\$20.21	\$0.00	\$68.48
3	65	\$38.10	\$16.03	\$20.21	\$0.00	\$74.34
4	70	\$41.03	\$16.03	\$20.21	\$0.00	\$77.27
5	80	\$46.90	\$16.03	\$20.21	\$0.00	\$83.14

**Notes:**

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

**Apprentice to Journeyworker Ratio:1:1**

ELEVATOR CONSTRUCTOR HELPER <i>ELEVATOR CONSTRUCTORS LOCAL 41</i>	01/01/2022	\$41.03	\$16.03	\$20.21	\$0.00	\$77.27
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"						
FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY &amp; HIGHWAY)</i>	12/01/2022	\$33.25	\$9.35	\$14.41	\$0.00	\$57.01
	06/01/2023	\$33.87	\$9.35	\$14.41	\$0.00	\$57.63
	12/01/2023	\$34.50	\$9.35	\$14.41	\$0.00	\$58.26
	06/01/2024	\$35.70	\$9.35	\$14.41	\$0.00	\$59.46
	12/01/2024	\$36.90	\$9.35	\$14.41	\$0.00	\$60.66
	06/01/2025	\$38.15	\$9.35	\$14.41	\$0.00	\$61.91
	12/01/2025	\$39.39	\$9.35	\$14.41	\$0.00	\$63.15
	06/01/2026	\$40.69	\$9.35	\$14.41	\$0.00	\$64.45
	12/01/2026	\$41.98	\$9.35	\$14.41	\$0.00	\$65.74
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
FIELD ENG.INST/ROD-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/1999	\$18.84	\$4.80	\$4.10	\$0.00	\$27.74
FIELD ENG.PARTY CHIEF:BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/1999	\$21.33	\$4.80	\$4.10	\$0.00	\$30.23
FIELD ENG.SURVEY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 98</i>	06/01/1999	\$22.33	\$4.80	\$4.10	\$0.00	\$31.23
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 7</i>	01/01/2023	\$47.01	\$12.50	\$13.96	\$0.00	\$73.47
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING <i>ELECTRICIANS LOCAL 7</i>	01/01/2023	\$47.01	\$12.50	\$13.96	\$0.00	\$73.47
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2022	\$37.68	\$13.38	\$15.00	\$0.00	\$66.06
	06/01/2023	\$38.63	\$13.38	\$15.00	\$0.00	\$67.01
	12/01/2023	\$39.58	\$13.38	\$15.00	\$0.00	\$67.96

**Apprentice - OPERATING ENGINEERS - Local 98 Class 3**

**Effective Date -** 12/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$22.61	\$12.47	\$14.50	\$0.00	\$49.58
2	70	\$26.38	\$12.47	\$14.50	\$0.00	\$53.35
3	80	\$30.14	\$12.47	\$14.50	\$0.00	\$57.11
4	90	\$33.91	\$12.47	\$14.50	\$0.00	\$60.88

**Effective Date -** 06/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$23.18	\$12.47	\$14.50	\$0.00	\$50.15
2	70	\$27.04	\$12.47	\$14.50	\$0.00	\$54.01
3	80	\$30.90	\$12.47	\$14.50	\$0.00	\$57.87
4	90	\$34.77	\$12.47	\$14.50	\$0.00	\$61.74

**Notes:**

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

**Apprentice to Journeyworker Ratio:1:6**

FLAGGER & SIGNALER (HEAVY & HIGHWAY)	12/01/2022	\$25.23	\$9.35	\$14.41	\$0.00	\$48.99
LABORERS - ZONE 3 (HEAVY & HIGHWAY)	06/01/2023	\$25.98	\$9.35	\$14.41	\$0.00	\$49.74
	12/01/2023	\$25.98	\$9.35	\$14.41	\$0.00	\$49.74
	06/01/2024	\$27.01	\$9.35	\$14.41	\$0.00	\$50.77
	12/01/2024	\$27.01	\$9.35	\$14.41	\$0.00	\$50.77
	06/01/2025	\$28.09	\$9.35	\$14.41	\$0.00	\$51.85
	12/01/2025	\$28.09	\$9.35	\$14.41	\$0.00	\$51.85
	06/01/2026	\$29.21	\$9.35	\$14.41	\$0.00	\$52.97
	12/01/2026	\$29.21	\$9.35	\$14.41	\$0.00	\$52.97
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
FLOORCOVERER	03/01/2022	\$39.22	\$7.16	\$18.15	\$0.00	\$64.53
FLOORCOVERERS LOCAL 2168 ZONE III						

**Apprentice - FLOORCOVERER - Local 2168 Zone III**

**Effective Date - 03/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.61	\$7.16	\$1.40	\$0.00	\$28.17
2	55	\$21.57	\$7.16	\$1.40	\$0.00	\$30.13
3	60	\$23.53	\$7.16	\$13.95	\$0.00	\$44.64
4	65	\$25.49	\$7.16	\$13.95	\$0.00	\$46.60
5	70	\$27.45	\$7.16	\$15.35	\$0.00	\$49.96
6	75	\$29.42	\$7.16	\$15.35	\$0.00	\$51.93
7	80	\$31.38	\$7.16	\$16.75	\$0.00	\$55.29
8	85	\$33.34	\$7.16	\$16.75	\$0.00	\$57.25

**Notes:** Steps are 750 hrs.

% After 10/1/17; 45/45/55/55/70/70/80/80 (1500hr Steps)

Step 1&2 \$26.21/ 3&4 \$31.49/ 5&6 \$49.96/ 7&8 \$55.29

**Apprentice to Journeyworker Ratio:1:1**

FORK LIFT	12/01/2022	\$37.90	\$13.38	\$15.00	\$0.00	\$66.28
OPERATING ENGINEERS LOCAL 98	06/01/2023	\$38.85	\$13.38	\$15.00	\$0.00	\$67.23
	12/01/2023	\$39.80	\$13.38	\$15.00	\$0.00	\$68.18

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

GENERATORS/LIGHTING PLANTS	12/01/2022	\$34.45	\$13.38	\$15.00	\$0.00	\$62.83
OPERATING ENGINEERS LOCAL 98	06/01/2023	\$35.40	\$13.38	\$15.00	\$0.00	\$63.78
	12/01/2023	\$36.35	\$13.38	\$15.00	\$0.00	\$64.73

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)	06/01/2020	\$39.18	\$10.80	\$10.45	\$0.00	\$60.43
GLAZIERS LOCAL 1333						

**Apprentice - GLAZIER - Local 1333**

**Effective Date - 06/01/2020**

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

**Notes:**

**Apprentice to Journeyworker Ratio:1:3**

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
GRADER/TRENCHING MACHINE/DERRICK <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2022	\$38.21	\$13.38	\$15.00	\$0.00	\$66.59
	06/01/2023	\$39.16	\$13.38	\$15.00	\$0.00	\$67.54
	12/01/2023	\$40.11	\$13.38	\$15.00	\$0.00	\$68.49
	For apprentice rates see "Apprentice- OPERATING ENGINEERS"					
HVAC (DUCTWORK) <i>SHEETMETAL WORKERS LOCAL 63</i>	01/01/2023	\$41.30	\$10.64	\$17.54	\$2.05	\$71.53
	07/01/2023	\$42.55	\$10.64	\$17.54	\$2.05	\$72.78
	01/01/2024	\$43.80	\$10.64	\$17.54	\$2.05	\$74.03
	07/01/2024	\$45.05	\$10.64	\$17.54	\$2.05	\$75.28
	01/01/2025	\$46.30	\$10.64	\$17.54	\$2.05	\$76.53
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (ELECTRICAL CONTROLS) <i>ELECTRICIANS LOCAL 7</i>	01/01/2023	\$47.01	\$12.50	\$13.96	\$0.00	\$73.47
For apprentice rates see "Apprentice- ELECTRICIAN"						
HVAC (TESTING AND BALANCING - AIR) <i>SHEETMETAL WORKERS LOCAL 63</i>	01/01/2023	\$41.30	\$10.64	\$17.54	\$2.05	\$71.53
	07/01/2023	\$42.55	\$10.64	\$17.54	\$2.05	\$72.78
	01/01/2024	\$43.80	\$10.64	\$17.54	\$2.05	\$74.03
	07/01/2024	\$45.05	\$10.64	\$17.54	\$2.05	\$75.28
	01/01/2025	\$46.30	\$10.64	\$17.54	\$2.05	\$76.53
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING -WATER) <i>PLUMBERS &amp; PIPEFITTERS LOCAL 104</i>	09/17/2022	\$45.71	\$9.55	\$17.10	\$0.00	\$72.36
	03/17/2023	\$46.96	\$9.55	\$17.10	\$0.00	\$73.61
	09/17/2023	\$47.96	\$9.55	\$17.10	\$0.00	\$74.61
	03/17/2024	\$49.21	\$9.55	\$17.10	\$0.00	\$75.86
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC <i>PLUMBERS &amp; PIPEFITTERS LOCAL 104</i>	09/17/2022	\$45.71	\$9.55	\$17.10	\$0.00	\$72.36
	03/17/2023	\$46.96	\$9.55	\$17.10	\$0.00	\$73.61
	09/17/2023	\$47.96	\$9.55	\$17.10	\$0.00	\$74.61
	03/17/2024	\$49.21	\$9.55	\$17.10	\$0.00	\$75.86
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY &amp; HIGHWAY)</i>	12/01/2022	\$33.75	\$9.35	\$14.41	\$0.00	\$57.51
	06/01/2023	\$34.37	\$9.35	\$14.41	\$0.00	\$58.13
	12/01/2023	\$35.00	\$9.35	\$14.41	\$0.00	\$58.76
	06/01/2024	\$36.20	\$9.35	\$14.41	\$0.00	\$59.96
	12/01/2024	\$37.40	\$9.35	\$14.41	\$0.00	\$61.16
	06/01/2025	\$38.65	\$9.35	\$14.41	\$0.00	\$62.41
	12/01/2025	\$39.89	\$9.35	\$14.41	\$0.00	\$63.65
	06/01/2026	\$41.19	\$9.35	\$14.41	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
INSULATOR (PIPES & TANKS) <i>HEAT &amp; FROST INSULATORS LOCAL 6 (SPRINGFIELD)</i>	09/01/2022	\$44.05	\$13.80	\$17.14	\$0.00	\$74.99

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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**Apprentice - ASBESTOS INSULATOR (Pipes & Tanks) - Local 6 Springfield**

**Effective Date -** 09/01/2022

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

**Notes:**

Steps are 1 year

**Apprentice to Journeyworker Ratio:1:4**

IRONWORKER/WELDER	09/16/2022	\$38.06	\$8.25	\$22.70	\$0.00	\$69.01
IRONWORKERS LOCAL 7 (SPRINGFIELD AREA)	03/16/2023	\$38.91	\$8.25	\$22.70	\$0.00	\$69.86
	09/16/2023	\$39.81	\$8.25	\$22.70	\$0.00	\$70.76
	03/16/2024	\$40.66	\$8.25	\$22.70	\$0.00	\$71.61

**Apprentice - IRONWORKER - Local 7 Springfield**

**Effective Date -** 09/16/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$22.84	\$8.25	\$22.70	\$0.00	\$53.79
2	70	\$26.64	\$8.25	\$22.70	\$0.00	\$57.59
3	75	\$28.55	\$8.25	\$22.70	\$0.00	\$59.50
4	80	\$30.45	\$8.25	\$22.70	\$0.00	\$61.40
5	85	\$32.35	\$8.25	\$22.70	\$0.00	\$63.30
6	90	\$34.25	\$8.25	\$22.70	\$0.00	\$65.20

**Notes:**

**Apprentice to Journeyworker Ratio:1:4**

JACKHAMMER & PAVING BREAKER OPERATOR	12/01/2022	\$33.88	\$9.10	\$16.19	\$0.00	\$59.17
LABORERS - ZONE 3 (BUILDING & SITE)	06/01/2023	\$34.50	\$9.10	\$16.19	\$0.00	\$59.79
	12/01/2023	\$35.13	\$9.10	\$16.19	\$0.00	\$60.42

For apprentice rates see "Apprentice- LABORER"

LABORER	12/01/2022	\$33.63	\$9.10	\$16.19	\$0.00	\$58.92
LABORERS - ZONE 3 (BUILDING & SITE)	06/01/2023	\$34.25	\$9.10	\$16.19	\$0.00	\$59.54
	12/01/2023	\$34.88	\$9.10	\$16.19	\$0.00	\$60.17

Apprentice - *LABORER - Zone 3 Building & Site*

Effective Date - 12/01/2022

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$20.18	\$9.10	\$16.19	\$0.00	\$45.47
2	70	\$23.54	\$9.10	\$16.19	\$0.00	\$48.83
3	80	\$26.90	\$9.10	\$16.19	\$0.00	\$52.19
4	90	\$30.27	\$9.10	\$16.19	\$0.00	\$55.56

Effective Date - 06/01/2023

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$20.55	\$9.10	\$16.19	\$0.00	\$45.84
2	70	\$23.98	\$9.10	\$16.19	\$0.00	\$49.27
3	80	\$27.40	\$9.10	\$16.19	\$0.00	\$52.69
4	90	\$30.83	\$9.10	\$16.19	\$0.00	\$56.12

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER (HEAVY & HIGHWAY)	12/01/2022	\$33.00	\$9.35	\$14.41	\$0.00	\$56.76
LABORERS - ZONE 3 (HEAVY & HIGHWAY)	06/01/2023	\$33.62	\$9.35	\$14.41	\$0.00	\$57.38
	12/01/2023	\$34.25	\$9.35	\$14.41	\$0.00	\$58.01
	06/01/2024	\$35.45	\$9.35	\$14.41	\$0.00	\$59.21
	12/01/2024	\$36.65	\$9.35	\$14.41	\$0.00	\$60.41
	06/01/2025	\$37.90	\$9.35	\$14.41	\$0.00	\$61.66
	12/01/2025	\$39.14	\$9.35	\$14.41	\$0.00	\$62.90
	06/01/2026	\$40.44	\$9.35	\$14.41	\$0.00	\$64.20
	12/01/2026	\$41.73	\$9.35	\$14.41	\$0.00	\$65.49

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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**Apprentice - LABORER (Heavy & Highway) - Zone 3**

**Effective Date - 12/01/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$19.80	\$9.35	\$14.41	\$0.00	\$43.56
2	70	\$23.10	\$9.35	\$14.41	\$0.00	\$46.86
3	80	\$26.40	\$9.35	\$14.41	\$0.00	\$50.16
4	90	\$29.70	\$9.35	\$14.41	\$0.00	\$53.46

**Effective Date - 06/01/2023**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$20.17	\$9.35	\$14.41	\$0.00	\$43.93
2	70	\$23.53	\$9.35	\$14.41	\$0.00	\$47.29
3	80	\$26.90	\$9.35	\$14.41	\$0.00	\$50.66
4	90	\$30.26	\$9.35	\$14.41	\$0.00	\$54.02

**Notes:**

**Apprentice to Journeyworker Ratio:1:5**

LABORER: CARPENTER TENDER LABORERS - ZONE 3 (BUILDING & SITE)	12/01/2022	\$33.63	\$9.10	\$16.19	\$0.00	\$58.92
	06/01/2023	\$34.25	\$9.10	\$16.19	\$0.00	\$59.54
	12/01/2023	\$34.88	\$9.10	\$16.19	\$0.00	\$60.17
For apprentice rates see "Apprentice- LABORER"						
LABORER: CEMENT FINISHER TENDER LABORERS - ZONE 3 (BUILDING & SITE)	12/01/2022	\$33.63	\$9.10	\$16.19	\$0.00	\$58.92
	06/01/2023	\$34.25	\$9.10	\$16.19	\$0.00	\$59.54
	12/01/2023	\$34.88	\$9.10	\$16.19	\$0.00	\$60.17
For apprentice rates see "Apprentice- LABORER"						
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER LABORERS - ZONE 3 (BUILDING & SITE)	12/01/2022	\$33.48	\$9.10	\$16.44	\$0.00	\$59.02
	06/01/2023	\$34.10	\$9.10	\$16.44	\$0.00	\$59.64
	12/01/2023	\$34.73	\$9.10	\$16.44	\$0.00	\$60.27
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER LABORERS - ZONE 3 (BUILDING & SITE)	12/01/2022	\$34.63	\$9.10	\$16.19	\$0.00	\$59.92
	06/01/2023	\$35.25	\$9.10	\$16.19	\$0.00	\$60.54
	12/01/2023	\$35.88	\$9.10	\$16.19	\$0.00	\$61.17
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER (HEAVY & HIGHWAY) LABORERS - ZONE 3 (HEAVY & HIGHWAY)	12/01/2022	\$33.25	\$9.35	\$14.41	\$0.00	\$57.01
	06/01/2023	\$33.87	\$9.35	\$14.41	\$0.00	\$57.63
	12/01/2023	\$34.50	\$9.35	\$14.41	\$0.00	\$58.26
	06/01/2024	\$35.70	\$9.35	\$14.41	\$0.00	\$59.46
	12/01/2024	\$36.90	\$9.35	\$14.41	\$0.00	\$60.66
	06/01/2025	\$38.15	\$9.35	\$14.41	\$0.00	\$61.91
	12/01/2025	\$39.39	\$9.35	\$14.41	\$0.00	\$63.15
	06/01/2026	\$40.69	\$9.35	\$14.41	\$0.00	\$64.45
	12/01/2026	\$41.98	\$9.35	\$14.41	\$0.00	\$65.74
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 3 (BUILDING &amp; SITE)</i>	12/01/2022	\$33.63	\$9.10	\$16.19	\$0.00	\$58.92
	06/01/2023	\$34.25	\$9.10	\$16.19	\$0.00	\$59.54
	12/01/2023	\$34.88	\$9.10	\$16.19	\$0.00	\$60.17
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER <i>LABORERS - ZONE 3 (BUILDING &amp; SITE)</i>	12/01/2022	\$33.63	\$9.10	\$16.19	\$0.00	\$58.92
	06/01/2023	\$34.25	\$9.10	\$16.19	\$0.00	\$59.54
	12/01/2023	\$34.88	\$9.10	\$16.19	\$0.00	\$60.17
This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction . For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR <i>LABORERS - ZONE 3 (BUILDING &amp; SITE)</i>	12/01/2022	\$33.88	\$9.10	\$16.19	\$0.00	\$59.17
	06/01/2023	\$34.50	\$9.10	\$16.19	\$0.00	\$59.79
	12/01/2023	\$35.13	\$9.10	\$16.19	\$0.00	\$60.42
For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY &amp; HIGHWAY)</i>	12/01/2022	\$33.25	\$9.35	\$14.41	\$0.00	\$57.01
	06/01/2023	\$33.87	\$9.35	\$14.41	\$0.00	\$57.63
	12/01/2023	\$34.50	\$9.35	\$14.41	\$0.00	\$58.26
	06/01/2024	\$35.70	\$9.35	\$14.41	\$0.00	\$59.46
	12/01/2024	\$36.90	\$9.35	\$14.41	\$0.00	\$60.66
	06/01/2025	\$38.15	\$9.35	\$14.41	\$0.00	\$61.91
	12/01/2025	\$39.39	\$9.35	\$14.41	\$0.00	\$63.15
	06/01/2026	\$40.69	\$9.35	\$14.41	\$0.00	\$64.45
	12/01/2026	\$41.98	\$9.35	\$14.41	\$0.00	\$65.74
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE &amp; TILE</i>	02/01/2023	\$39.73	\$11.49	\$19.53	\$0.00	\$70.75
	08/01/2023	\$41.37	\$11.49	\$19.53	\$0.00	\$72.39
	02/01/2024	\$42.37	\$11.49	\$19.53	\$0.00	\$73.39
	08/01/2024	\$44.05	\$11.49	\$19.53	\$0.00	\$75.07
	02/01/2025	\$45.90	\$11.49	\$19.53	\$0.00	\$76.92
	08/01/2025	\$46.81	\$11.49	\$19.53	\$0.00	\$77.83
	02/01/2026	\$47.89	\$11.49	\$19.53	\$0.00	\$78.91
	08/01/2026	\$49.65	\$11.49	\$19.53	\$0.00	\$80.67
	02/01/2027	\$50.77	\$11.49	\$19.53	\$0.00	\$81.79



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

**Effective Date - 02/01/2023**

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

**Effective Date - 08/01/2023**

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

**Notes:**

**Apprentice to Journeyworker Ratio:1:5**

MARBLE MASON/TILE LAYER(SP/PT)SeeBrick

BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE

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

MECH. SWEEPER OPERATOR (ON CONST. SITES)	12/01/2022	\$38.21	\$13.38	\$15.00	\$0.00	\$66.59
OPERATING ENGINEERS LOCAL 98	06/01/2023	\$39.16	\$13.38	\$15.00	\$0.00	\$67.54
	12/01/2023	\$40.11	\$13.38	\$15.00	\$0.00	\$68.49

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MECHANIC/WELDER/BOOM TRUCK	12/01/2022	\$37.68	\$13.38	\$15.00	\$0.00	\$66.06
OPERATING ENGINEERS LOCAL 98	06/01/2023	\$38.63	\$13.38	\$15.00	\$0.00	\$67.01
	12/01/2023	\$39.58	\$13.38	\$15.00	\$0.00	\$67.96

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MILLWRIGHT (Zone 3)	01/02/2023	\$40.16	\$8.58	\$21.57	\$0.00	\$70.31
MILLWRIGHTS LOCAL 1121 - Zone 3						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
<b>Apprentice - MILLWRIGHT - Local 1121 Zone 3</b>						
<b>Effective Date - 01/02/2023</b>						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$22.09	\$8.58	\$5.72	\$0.00	\$36.39
2	65	\$26.10	\$8.58	\$17.93	\$0.00	\$52.61
3	75	\$30.12	\$8.58	\$18.98	\$0.00	\$57.68
4	85	\$34.14	\$8.58	\$20.01	\$0.00	\$62.73
<div> <b>Notes:</b> Step 1&amp;2 Appr. indentured after 1/6/2020 receive no pension,  but do receive annuity. (Step 1 \$5.72, Step 2 \$6.66)  Steps are 2,000 hours </div>						
<b>Apprentice to Journeyworker Ratio:1:4</b>						
<b>MORTAR MIXER</b>						
<i>LABORERS - ZONE 3 (BUILDING &amp; SITE)</i>		12/01/2022	\$33.88	\$9.10	\$16.19	\$59.17
		06/01/2023	\$34.50	\$9.10	\$16.19	\$59.79
		12/01/2023	\$35.13	\$9.10	\$16.19	\$60.42
For apprentice rates see "Apprentice- LABORER"						
<b>OILER</b>						
<i>OPERATING ENGINEERS LOCAL 98</i>		12/01/2022	\$33.37	\$13.38	\$15.00	\$61.75
		06/01/2023	\$34.32	\$13.38	\$15.00	\$62.70
		12/01/2023	\$35.27	\$13.38	\$15.00	\$63.65
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
<b>OTHER POWER DRIVEN EQUIPMENT - CLASS VI</b>						
<i>OPERATING ENGINEERS LOCAL 98</i>		12/01/2022	\$32.80	\$12.47	\$14.50	\$59.77
		06/01/2023	\$33.75	\$12.47	\$14.50	\$60.72
		12/01/2023	\$34.70	\$12.47	\$14.50	\$61.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
<b>PAINTER (BRIDGES/TANKS)</b>						
<i>PAINTERS LOCAL 35 - ZONE 3</i>		01/01/2023	\$56.06	\$8.65	\$23.05	\$87.76
		07/01/2023	\$57.26	\$8.65	\$23.05	\$88.96
		01/01/2024	\$58.46	\$8.65	\$23.05	\$90.16
		07/01/2024	\$59.66	\$8.65	\$23.05	\$91.36
		01/01/2025	\$60.86	\$8.65	\$23.05	\$92.56

**Apprentice - PAINTER Local 35 - BRIDGES/TANKS****Effective Date - 01/01/2023**

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

**Effective Date - 07/01/2023**

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

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

PAINTER (SPRAY OR SANDBLAST, NEW) \*

\* If 30% or more of surfaces to be painted are new construction,  
NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 3

01/01/2023	\$38.93	\$8.65	\$19.15	\$0.00	\$66.73
07/01/2023	\$39.98	\$8.65	\$19.15	\$0.00	\$67.78
01/01/2024	\$41.08	\$8.65	\$19.15	\$0.00	\$68.88
07/01/2024	\$42.13	\$8.65	\$19.15	\$0.00	\$69.93
01/01/2025	\$43.23	\$8.65	\$19.15	\$0.00	\$71.03

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

Effective Date - 01/01/2023

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

Effective Date - 07/01/2023

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

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

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

Effective Date - 01/01/2023

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

Effective Date - 07/01/2023

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

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

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

Apprentice - PAINTER - Local 35 Zone 3 - BRUSH NEW

Effective Date - 01/01/2023

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

Effective Date - 07/01/2023

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

Notes:  
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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**Apprentice - PAINTER Local 35 Zone 3 - BRUSH REPAINT**

**Effective Date - 01/01/2023**

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

**Effective Date - 07/01/2023**

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

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY)	12/01/2022	\$33.00	\$9.35	\$14.41	\$0.00	\$56.76
LABORERS - ZONE 3 (HEAVY & HIGHWAY)	06/01/2023	\$33.62	\$9.35	\$14.41	\$0.00	\$57.38
	12/01/2023	\$34.25	\$9.35	\$14.41	\$0.00	\$58.01
	06/01/2024	\$35.45	\$9.35	\$14.41	\$0.00	\$59.21
	12/01/2024	\$36.65	\$9.35	\$14.41	\$0.00	\$60.41
	06/01/2025	\$37.90	\$9.35	\$14.41	\$0.00	\$61.66
	12/01/2025	\$39.14	\$9.35	\$14.41	\$0.00	\$62.90
	06/01/2026	\$40.44	\$9.35	\$14.41	\$0.00	\$64.20
	12/01/2026	\$41.73	\$9.35	\$14.41	\$0.00	\$65.49
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
PANEL & PICKUP TRUCKS DRIVER	12/01/2021	\$35.78	\$13.41	\$16.01	\$0.00	\$65.20
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B						
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK)	08/01/2020	\$43.53	\$9.40	\$23.12	\$0.00	\$76.05
PILE DRIVER LOCAL 56 (ZONE 3)						
For apprentice rates see "Apprentice- PILE DRIVER"						
PILE DRIVER	08/01/2020	\$43.53	\$9.40	\$23.12	\$0.00	\$76.05
PILE DRIVER LOCAL 56 (ZONE 3)						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
<b>Apprentice - PILE DRIVER - Local 56 Zone 3</b>						
<b>Effective Date - 08/01/2020</b>						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	0	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<div> <b>Notes:</b> Apprentice wages shall be no less than the following Steps;  (Same as set in Zone 1)  1\$57.06/2\$61.96/3\$66.87/4\$69.32/5\$71.78/6\$71.78/7\$76.68/8\$76.68 </div>						
<b>Apprentice to Journeyworker Ratio:1:5</b>						
<b>PIPELAYER</b>						
<i>LABORERS - ZONE 3 (BUILDING &amp; SITE)</i>						
		12/01/2022	\$33.88	\$9.10	\$16.19	\$59.17
		06/01/2023	\$34.50	\$9.10	\$16.19	\$59.79
		12/01/2023	\$35.13	\$9.10	\$16.19	\$60.42
For apprentice rates see "Apprentice- LABORER"						
<b>PIPELAYER (HEAVY &amp; HIGHWAY)</b>						
<i>LABORERS - ZONE 3 (HEAVY &amp; HIGHWAY)</i>						
		12/01/2022	\$33.25	\$9.35	\$14.41	\$57.01
		06/01/2023	\$33.87	\$9.35	\$14.41	\$57.63
		12/01/2023	\$34.50	\$9.35	\$14.41	\$58.26
		06/01/2024	\$35.70	\$9.35	\$14.41	\$59.46
		12/01/2024	\$36.90	\$9.35	\$14.41	\$60.66
		06/01/2025	\$38.15	\$9.35	\$14.41	\$61.91
		12/01/2025	\$39.39	\$9.35	\$14.41	\$63.15
		06/01/2026	\$40.69	\$9.35	\$14.41	\$64.45
		12/01/2026	\$41.98	\$9.35	\$14.41	\$65.74
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
<b>PLUMBER &amp; PIPEFITTER</b>						
<i>PLUMBERS &amp; PIPEFITTERS LOCAL 104</i>						
		09/17/2022	\$45.71	\$9.55	\$17.10	\$72.36
		03/17/2023	\$46.96	\$9.55	\$17.10	\$73.61
		09/17/2023	\$47.96	\$9.55	\$17.10	\$74.61
		03/17/2024	\$49.21	\$9.55	\$17.10	\$75.86



**Apprentice - PLUMBER/PIPEFITTER - Local 104****Effective Date - 09/17/2022**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$20.57	\$9.55	\$10.10	\$0.00	\$40.22
2	50	\$22.86	\$9.55	\$10.10	\$0.00	\$42.51
3	55	\$25.14	\$9.55	\$10.10	\$0.00	\$44.79
4	60	\$27.43	\$9.55	\$10.10	\$0.00	\$47.08
5	65	\$29.71	\$9.55	\$10.10	\$0.00	\$49.36
6	70	\$32.00	\$9.55	\$10.10	\$0.00	\$51.65
7	75	\$34.28	\$9.55	\$10.10	\$0.00	\$53.93
8	80	\$36.57	\$9.55	\$10.10	\$0.00	\$56.22
9	80	\$36.57	\$9.55	\$17.10	\$0.00	\$63.22
10	80	\$36.57	\$9.55	\$17.10	\$0.00	\$63.22

**Effective Date - 03/17/2023**

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

**Notes: \*\*1:1,2:5,3:9,4:12****Apprentice to Journeyworker Ratio:\*\***

PNEUMATIC CONTROLS (TEMP.)	09/17/2022	\$45.71	\$9.55	\$17.10	\$0.00	\$72.36
PLUMBERS & PIPEFITTERS LOCAL 104	03/17/2023	\$46.96	\$9.55	\$17.10	\$0.00	\$73.61
	09/17/2023	\$47.96	\$9.55	\$17.10	\$0.00	\$74.61
	03/17/2024	\$49.21	\$9.55	\$17.10	\$0.00	\$75.86

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

PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY)	12/01/2022	\$33.25	\$9.35	\$14.41	\$0.00	\$57.01
LABORERS - ZONE 3 (HEAVY & HIGHWAY)	06/01/2023	\$33.87	\$9.35	\$14.41	\$0.00	\$57.63
	12/01/2023	\$34.50	\$9.35	\$14.41	\$0.00	\$58.26
	06/01/2024	\$35.70	\$9.35	\$14.41	\$0.00	\$59.46
	12/01/2024	\$36.90	\$9.35	\$14.41	\$0.00	\$60.66
	06/01/2025	\$38.15	\$9.35	\$14.41	\$0.00	\$61.91
	12/01/2025	\$39.39	\$9.35	\$14.41	\$0.00	\$63.15
	06/01/2026	\$40.69	\$9.35	\$14.41	\$0.00	\$64.45
	12/01/2026	\$41.98	\$9.35	\$14.41	\$0.00	\$65.74

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
POWDERMAN & BLASTER <i>LABORERS - ZONE 3 (BUILDING &amp; SITE)</i>	12/01/2022	\$34.63	\$9.10	\$16.19	\$0.00	\$59.92
	06/01/2023	\$35.25	\$9.10	\$16.19	\$0.00	\$60.54
	12/01/2023	\$35.88	\$9.10	\$16.19	\$0.00	\$61.17
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY &amp; HIGHWAY)</i>	12/01/2022	\$33.75	\$9.35	\$14.41	\$0.00	\$57.51
	06/01/2023	\$34.37	\$9.35	\$14.41	\$0.00	\$58.13
	12/01/2023	\$35.00	\$9.35	\$14.41	\$0.00	\$58.76
	06/01/2024	\$36.20	\$9.35	\$14.41	\$0.00	\$59.96
	12/01/2024	\$37.40	\$9.35	\$14.41	\$0.00	\$61.16
	06/01/2025	\$38.65	\$9.35	\$14.41	\$0.00	\$62.41
	12/01/2025	\$39.89	\$9.35	\$14.41	\$0.00	\$63.65
	06/01/2026	\$41.19	\$9.35	\$14.41	\$0.00	\$64.95
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)	12/01/2026	\$42.48	\$9.35	\$14.41	\$0.00	\$66.24
PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2022	\$38.21	\$13.38	\$15.00	\$0.00	\$66.59
	06/01/2023	\$39.16	\$13.38	\$15.00	\$0.00	\$67.54
	12/01/2023	\$40.11	\$13.38	\$15.00	\$0.00	\$68.49
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2022	\$37.68	\$13.38	\$15.00	\$0.00	\$66.06
	06/01/2023	\$38.63	\$13.38	\$15.00	\$0.00	\$67.01
	12/01/2023	\$39.58	\$13.38	\$15.00	\$0.00	\$67.96
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER <i>TEAMSTERS 404 - Construction Service (Northampton)</i>	05/01/2020	\$22.44	\$11.07	\$6.50	\$0.00	\$40.01
RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 3 (BUILDING &amp; SITE)</i>	12/01/2022	\$33.88	\$9.10	\$16.19	\$0.00	\$59.17
	06/01/2023	\$34.50	\$9.10	\$16.19	\$0.00	\$59.79
	12/01/2023	\$35.13	\$9.10	\$16.19	\$0.00	\$60.42
For apprentice rates see "Apprentice- LABORER"						
ROLLER OPERATOR <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2022	\$37.07	\$13.38	\$15.00	\$0.00	\$65.45
	06/01/2023	\$38.02	\$13.38	\$15.00	\$0.00	\$66.40
	12/01/2023	\$38.97	\$13.38	\$15.00	\$0.00	\$67.35
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
ROOFER (Coal tar pitch) <i>ROOFERS LOCAL 248</i>	07/01/2022	\$38.16	\$10.35	\$17.25	\$0.00	\$65.76
	07/01/2023	\$38.66	\$10.35	\$18.75	\$0.00	\$67.76
For apprentice rates see "Apprentice- ROOFER"						
ROOFER (Inc.Roofing Waterproofing &Roofing Dampproofing) <i>ROOFERS LOCAL 248</i>	07/01/2022	\$37.66	\$10.35	\$16.75	\$0.00	\$64.76
	07/01/2023	\$39.16	\$10.35	\$18.25	\$0.00	\$67.76

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
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**Apprentice - ROOFER - Local 248**

**Effective Date - 07/01/2022**

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

**Effective Date - 07/01/2023**

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

**Notes:**

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

**Apprentice to Journeyworker Ratio:1:3**

ROOFER SLATE / TILE / PRECAST CONCRETE	07/01/2022	\$38.16	\$10.35	\$17.25	\$0.00	\$65.76
ROOFERS LOCAL 248	07/01/2023	\$38.66	\$10.35	\$18.75	\$0.00	\$67.76
For apprentice rates see "Apprentice- ROOFER"						
SCRAPER	12/01/2022	\$37.68	\$13.38	\$15.00	\$0.00	\$66.06
OPERATING ENGINEERS LOCAL 98	06/01/2023	\$38.63	\$13.38	\$15.00	\$0.00	\$67.01
	12/01/2023	\$39.58	\$13.38	\$15.00	\$0.00	\$67.96
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
SELF-POWERED ROLLERS AND COMPACTORS (TAMPERS)	12/01/2022	\$37.07	\$13.38	\$15.00	\$0.00	\$65.45
OPERATING ENGINEERS LOCAL 98	06/01/2023	\$38.02	\$13.38	\$15.00	\$0.00	\$66.40
	12/01/2023	\$38.97	\$13.38	\$15.00	\$0.00	\$67.35
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
SELF-PROPELLED POWER BROOM	12/01/2022	\$34.45	\$13.38	\$15.00	\$0.00	\$62.83
OPERATING ENGINEERS LOCAL 98	06/01/2023	\$35.40	\$13.38	\$15.00	\$0.00	\$63.78
	12/01/2023	\$36.35	\$13.38	\$15.00	\$0.00	\$64.73
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
SHEETMETAL WORKER <i>SHEETMETAL WORKERS LOCAL 63</i>	01/01/2023	\$41.30	\$10.64	\$17.54	\$2.05	\$71.53
	07/01/2023	\$42.55	\$10.64	\$17.54	\$2.05	\$72.78
	01/01/2024	\$43.80	\$10.64	\$17.54	\$2.05	\$74.03
	07/01/2024	\$45.05	\$10.64	\$17.54	\$2.05	\$75.28
	01/01/2025	\$46.30	\$10.64	\$17.54	\$2.05	\$76.53

**Apprentice - SHEET METAL WORKER - Local 63**

**Effective Date -** 01/01/2023

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

**Effective Date -** 07/01/2023

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

**Notes:**

**Apprentice to Journeyworker Ratio:1:3**

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

**Apprentice - SPRINKLER FITTER - Local 669****Effective Date - 04/01/2021**

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

**Notes:****Apprentice to Journeyworker Ratio:1:1**

TELECOMMUNICATION TECHNICIAN

01/01/2023

\$47.01

\$12.50

\$13.96

\$0.00

\$73.47

ELECTRICIANS LOCAL 7

**Apprentice - TELECOMMUNICATION TECHNICIAN - Local 7****Effective Date - 01/01/2023**

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

**Notes:**

Steps are 800 hours

**Apprentice to Journeyworker Ratio:1:1**

TERRAZZO FINISHERS

02/01/2023

\$59.29

\$11.49

\$22.34

\$0.00

\$93.12

BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE &amp; TILE

08/01/2023

\$61.34

\$11.49

\$22.34

\$0.00

\$95.17

02/01/2024

\$62.59

\$11.49

\$22.34

\$0.00

\$96.42

08/01/2024

\$64.69

\$11.49

\$22.34

\$0.00

\$98.52

02/01/2025

\$65.99

\$11.49

\$22.34

\$0.00

\$99.82

08/01/2025

\$68.14

\$11.49

\$22.34

\$0.00

\$101.97

02/10/2026

\$69.49

\$11.49

\$22.34

\$0.00

\$103.32

08/01/2026

\$71.69

\$11.49

\$22.34

\$0.00

\$105.52

02/01/2027

\$73.09

\$11.49

\$22.34

\$0.00

\$106.92

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

Effective Date - 02/01/2023

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

Effective Date - 08/01/2023

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

Notes:

Apprentice to Journeyworker Ratio:1:5

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

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

**Effective Date -** 02/01/2023

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

**Effective Date -** 08/01/2023

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

Notes:

**Apprentice to Journeyworker Ratio:1:5**

TEST BORING DRILLER	12/01/2022	\$46.58	\$9.35	\$17.97	\$0.00	\$73.90
LABORERS - FOUNDATION AND MARINE	06/01/2023	\$47.58	\$9.35	\$17.97	\$0.00	\$74.90
	12/01/2023	\$48.83	\$9.35	\$17.97	\$0.00	\$76.15
	06/01/2024	\$50.31	\$9.35	\$17.97	\$0.00	\$77.63
	12/01/2024	\$51.78	\$9.35	\$17.97	\$0.00	\$79.10
	06/01/2025	\$53.28	\$9.35	\$17.97	\$0.00	\$80.60
	12/01/2025	\$54.78	\$9.35	\$17.97	\$0.00	\$82.10
	06/01/2026	\$56.33	\$9.35	\$17.97	\$0.00	\$83.65
	12/01/2026	\$57.83	\$9.35	\$17.97	\$0.00	\$85.15
For apprentice rates see "Apprentice- LABORER"						
TEST BORING DRILLER HELPER	12/01/2022	\$42.70	\$9.35	\$17.97	\$0.00	\$70.02
LABORERS - FOUNDATION AND MARINE	06/01/2023	\$43.70	\$9.35	\$17.97	\$0.00	\$71.02
	12/01/2023	\$44.95	\$9.35	\$17.97	\$0.00	\$72.27
	06/01/2024	\$46.43	\$9.35	\$17.97	\$0.00	\$73.75
	12/01/2024	\$47.90	\$9.35	\$17.97	\$0.00	\$75.22
	06/01/2025	\$49.40	\$9.35	\$17.97	\$0.00	\$76.72
	12/01/2025	\$50.90	\$9.35	\$17.97	\$0.00	\$78.22
	06/01/2026	\$52.45	\$9.35	\$17.97	\$0.00	\$79.77
	12/01/2026	\$53.95	\$9.35	\$17.97	\$0.00	\$81.27
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2022	\$42.58	\$9.35	\$17.97	\$0.00	\$69.90
	06/01/2023	\$43.58	\$9.35	\$17.97	\$0.00	\$70.90
	12/01/2023	\$44.83	\$9.35	\$17.97	\$0.00	\$72.15
	06/01/2024	\$46.31	\$9.35	\$17.97	\$0.00	\$73.63
	12/01/2024	\$47.78	\$9.35	\$17.97	\$0.00	\$75.10
	06/01/2025	\$49.28	\$9.35	\$17.97	\$0.00	\$76.60
	12/01/2025	\$50.78	\$9.35	\$17.97	\$0.00	\$78.10
	06/01/2026	\$52.33	\$9.35	\$17.97	\$0.00	\$79.65
	12/01/2026	\$53.83	\$9.35	\$17.97	\$0.00	\$81.15
For apprentice rates see "Apprentice- LABORER"						
TRACTORS <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2022	\$37.07	\$13.38	\$15.00	\$0.00	\$65.45
	06/01/2023	\$38.02	\$13.38	\$15.00	\$0.00	\$66.40
	12/01/2023	\$38.97	\$13.38	\$15.00	\$0.00	\$67.35
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.82	\$13.41	\$16.01	\$0.00	\$66.24
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	12/01/2022	\$54.81	\$9.35	\$18.42	\$0.00	\$82.58
	06/01/2023	\$55.81	\$9.35	\$18.42	\$0.00	\$83.58
	12/01/2023	\$57.06	\$9.35	\$18.42	\$0.00	\$84.83
	06/01/2024	\$58.54	\$9.35	\$18.42	\$0.00	\$86.31
	12/01/2024	\$60.01	\$9.35	\$18.42	\$0.00	\$87.78
	06/01/2025	\$61.51	\$9.35	\$18.42	\$0.00	\$89.28
	12/01/2025	\$63.01	\$9.35	\$18.42	\$0.00	\$90.78
	06/01/2026	\$64.56	\$9.35	\$18.42	\$0.00	\$92.33
	12/01/2026	\$66.06	\$9.35	\$18.42	\$0.00	\$93.83
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	12/01/2022	\$56.81	\$9.35	\$18.42	\$0.00	\$84.58
	06/01/2023	\$57.81	\$9.35	\$18.42	\$0.00	\$85.58
	12/01/2023	\$59.06	\$9.35	\$18.42	\$0.00	\$86.83
	06/01/2024	\$60.54	\$9.35	\$18.42	\$0.00	\$88.31
	12/01/2024	\$62.01	\$9.35	\$18.42	\$0.00	\$89.78
	06/01/2025	\$63.51	\$9.35	\$18.42	\$0.00	\$91.28
	12/01/2025	\$65.01	\$9.35	\$18.42	\$0.00	\$92.78
	06/01/2026	\$66.56	\$9.35	\$18.42	\$0.00	\$94.33
	12/01/2026	\$68.06	\$9.35	\$18.42	\$0.00	\$95.83
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2022	\$46.88	\$9.35	\$18.42	\$0.00	\$74.65
	06/01/2023	\$47.88	\$9.35	\$18.42	\$0.00	\$75.65
	12/01/2023	\$49.13	\$9.35	\$18.42	\$0.00	\$76.90
	06/01/2024	\$50.61	\$9.35	\$18.42	\$0.00	\$78.38
	12/01/2024	\$52.08	\$9.35	\$18.42	\$0.00	\$79.85
	06/01/2025	\$53.58	\$9.35	\$18.42	\$0.00	\$81.35
	12/01/2025	\$55.08	\$9.35	\$18.42	\$0.00	\$82.85
	06/01/2026	\$56.63	\$9.35	\$18.42	\$0.00	\$84.40
	12/01/2026	\$58.13	\$9.35	\$18.42	\$0.00	\$85.90
For apprentice rates see "Apprentice- LABORER"						



Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2022	\$48.88	\$9.35	\$18.42	\$0.00	\$76.65
	06/01/2023	\$49.88	\$9.35	\$18.42	\$0.00	\$77.65
	12/01/2023	\$51.13	\$9.35	\$18.42	\$0.00	\$78.90
	06/01/2024	\$52.61	\$9.35	\$18.42	\$0.00	\$80.38
	12/01/2024	\$54.08	\$9.35	\$18.42	\$0.00	\$81.85
	06/01/2025	\$55.58	\$9.35	\$18.42	\$0.00	\$83.35
	12/01/2025	\$57.08	\$9.35	\$18.42	\$0.00	\$84.85
	06/01/2026	\$58.63	\$9.35	\$18.42	\$0.00	\$86.40
	12/01/2026	\$60.13	\$9.35	\$18.42	\$0.00	\$87.90
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2021	\$36.24	\$13.41	\$16.01	\$0.00	\$65.66
WAGON DRILL OPERATOR <i>LABORERS - ZONE 3 (BUILDING &amp; SITE)</i>	12/01/2022	\$33.88	\$9.10	\$16.19	\$0.00	\$59.17
	06/01/2023	\$34.50	\$9.10	\$16.19	\$0.00	\$59.79
	12/01/2023	\$35.13	\$9.10	\$16.19	\$0.00	\$60.42
For apprentice rates see "Apprentice- LABORER"						
WAGON DRILL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY &amp; HIGHWAY)</i>	12/01/2022	\$33.25	\$9.35	\$14.41	\$0.00	\$57.01
	06/01/2023	\$33.87	\$9.35	\$14.41	\$0.00	\$57.63
	12/01/2023	\$34.50	\$9.35	\$14.41	\$0.00	\$58.26
	06/01/2024	\$35.70	\$9.35	\$14.41	\$0.00	\$59.46
	12/01/2024	\$36.90	\$9.35	\$14.41	\$0.00	\$60.66
	06/01/2025	\$38.15	\$9.35	\$14.41	\$0.00	\$61.91
	12/01/2025	\$39.39	\$9.35	\$14.41	\$0.00	\$63.15
	06/01/2026	\$40.69	\$9.35	\$14.41	\$0.00	\$64.45
	12/01/2026	\$41.98	\$9.35	\$14.41	\$0.00	\$65.74
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
WATER METER INSTALLER <i>PLUMBERS &amp; PIPEFITTERS LOCAL 104</i>	09/17/2022	\$45.71	\$9.55	\$17.10	\$0.00	\$72.36
	03/17/2023	\$46.96	\$9.55	\$17.10	\$0.00	\$73.61
	09/17/2023	\$47.96	\$9.55	\$17.10	\$0.00	\$74.61
	03/17/2024	\$49.21	\$9.55	\$17.10	\$0.00	\$75.86
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						

Additional Apprentice Information:

Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the pre-determined hourly wage rate established by the Commissioner under the provisions of the M.G.L. c. 149, ss. 26-27D. Apprentice ratios are established by the Division of Apprenticeship Training pursuant to M.G.L. c. 23, ss. 11E-11L.

All apprentices must be registered with the Division of Apprenticeship Training in accordance with M.G.L. c. 23, ss. 11E-11L.

All steps are six months (1000 hours.)

Ratios are expressed in allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified.

\*\* Multiple ratios are listed in the comment field.

\*\*\* APP to JM; 1:1, 2:2, 2:3, 3:4, 4:4, 4:5, 4:6, 5:7, 6:7, 6:8, 6:9, 7:10, 8:10, 8:11, 8:12, 9:13, 10:13, 10:14, etc.

\*\*\*\* APP to JM; 1:1, 1:2, 2:3, 2:4, 3:5, 4:6, 4:7, 5:8, 6:9, 6:10, 7:11, 8:12, 8:13, 9:14, 10:15, 10:16, etc.

"General Decision Number: MA20230003 02/03/2023

# DAVIS BACON FEDERAL WAGE SCHEDULE

Superseded General Decision Number: MA20220003

State: Massachusetts

Construction Type: Building

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

BUILDING CONSTRUCTION PROJECTS Does not include residential construction consisting of single family homes and apartments up to and including 4 stories)

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

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	<ul style="list-style-type: none"> <li>. Executive Order 14026 generally applies to the contract.</li> <li>. The contractor must pay all covered workers at least \$16.20 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2023.</li> </ul>
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	<ul style="list-style-type: none"> <li>. Executive Order 13658 generally applies to the contract.</li> <li>. The contractor must pay all covered workers at least \$12.15 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2023.</li> </ul>

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

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

Modification Number	Publication Date
0	01/06/2023
1	01/13/2023
2	01/27/2023
3	02/03/2023

ASBE0006-011 09/01/2022

Rates	Fringes
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Insulator/asbestos worker  
(Includes the application of  
all insulating materials,  
protective coverings,  
coatings and finishes to all  
types of mechanical systems).....\$ 41.00      33.99

BOIL0029-001 01/01/2021

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

BRMA0001-001 08/01/2020

SPRINGFIELD/PITTSFIELD CHAPTER FRANKLIN, HAMPDEN, and  
HAMPSHIRE COUNTIES

Rates	Fringes
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BRICKLAYER  
BRICKLAYERS; CEMENT  
MASONS; PLASTERERS; STONE  
MASONS; MARBLE, TILE &  
TERRAZZO WORKERS.....\$ 44.16      33.63

BRMA0001-003 08/01/2020

SPRINGFIELD/PITTSFIELD  
BERKSHIRE

Rates	Fringes
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BRICKLAYER  
BRICKLAYERS; CEMENT  
MASONS; PLASTERERS; STONE  
MASONS; MARBLE, TILE &  
TERRAZZO WORKERS.....\$ 44.16      33.63

CARP0056-014 08/01/2022

Rates	Fringes
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PILEDRIVERMAN.....\$ 52.15      34.10

CARP0336-006 09/01/2022

Franklin County (Erving, Orange, North Orange and Warwick)

Rates	Fringes
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CARPENTER.....\$ 45.03      29.67

CARP0336-009 09/01/2022

## HAMPDEN; HAMPSHIRE AND FRANKLIN (Remainder)

	Rates	Fringes
Carpenter/Lather/Drywall Applicator.....	\$ 45.03	29.67

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CARP0336-013 09/01/2022

## BERKSHIRE COUNTY

	Rates	Fringes
CARPENTER.....	\$ 45.03	29.67

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\* CARP1121-004 01/02/2023

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

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CARP2168-003 09/01/2022

	Rates	Fringes
FLOOR LAYER: Carpet.....	\$ 39.57	25.60

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ELEC0007-002 07/03/2022HAMPDEN (Except Chester & Holyoke); HAMPSHIRE (Belchertown,  
Ware)

	Rates	Fringes
ELECTRICIAN.....	\$ 46.41	25.69

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ELEC0007-003 07/03/2022BERKSHIRE; FRANKLIN; HAMPDEN (Chester, Holyoke); HAMPSHIRE  
(Except Belchertown, Ware)

	Rates	Fringes
ELECTRICIAN.....	\$ 46.41	25.69

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ELEC0007-006 07/03/2022

	Rates	Fringes
Teledata System Installer.....	\$ 46.41	25.69

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ELEC0042-003 09/03/2017

	Rates	Fringes
Line Construction:		
Heavy Equipment Operator....	\$ 42.26	6.5%+19.81
Lineman, Cable Splicer and Dynamite Man.....	\$ 46.96	6.5%+22.00
Material Man, Tractor Trailer Driver, Equipment Operator.....	\$ 39.92	6.5%+19.21

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 ELEV0041-001 01/01/2023

	Rates	Fringes
ELEVATOR MECHANIC.....	\$ 61.13	37.335+a+b

FOOTNOTE:

a.Vacation: 6%/under 5 years based on regular hourly rate for all hours worked. 8%/over 5 years based on regular hourly rate for all hours worked.

b. PAID HOLIDAYS: New Year's Day; Memorial Day; Independence Day; Labor Day; Veterans' Day; Thanksgiving Day; the Friday after Thanksgiving Day; and Christmas Day.

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 ENGI0098-001 12/01/2016

	Rates	Fringes
Power equipment operators: (BUILDING & RESIDENTIAL)		
Group 1.....	\$ 33.68	23.96+A
Group 2.....	\$ 33.37	23.96+A
Group 3.....	\$ 33.15	23.96+A
Group 4.....	\$ 32.54	23.96+A
Group 5.....	\$ 29.92	23.96+A
Group 6.....	\$ 28.80	23.96+A
Group 7.....	\$ 26.86	23.96+A
Group 8.....	\$ 305.95	23.962+A
Group 9.....	\$ 230.69	23.96+A
Group 10.....	\$ 35.17	23.96+A
Group 11.....	\$ 38.18	23.96+A
Group 12.....	\$ 39.68	23.96+A
Group 13.....	\$ 40.68	23.96+A
Group 14.....	\$ 41.68	23.96+A
Group 15.....	\$ 43.18	23.96+A

HAZARDOUS WASTE PREMIUM \$2.00

FOOTNOTE FOR POWER EQUIPMENT OPERATORS:

Group 8 and Group 9 are per day wages.

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

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

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

Group 2: Rotary drill with mounted compressor; compressor house (3 to 6 compressors); rock and earth boring machines (excluding McCarthy and similar drills); front end loaders 4 cu yds to 5 1/2 cu yds); forklifts-7 ft lift and over 3

ton capacity; scraper 21 yds and over (struck load); sonic hammer console; reclaimers road planer/milling machine; cal tracks; ballast regulators; rail anchor machines; switch tampers, asphalt pavers; mechanic; welder and transfer machine.

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

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

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

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

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

Group 8: Truck crane crews

Group 9: Oiler

Group 10: Master Mechanic

Group 11: Boom lengths over 150 feet including jib

Group 12: Boom lengths over 200 feet including jib

Group 13: Boom lengths over 250 feet including jib

Group 14: Boom lengths over 300 feet including jib

Group 15: Boom lengths over 350 feet including jib

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IRON0007-014 09/16/2022

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

	Rates	Fringes
IRONWORKER.....	\$ 38.06	31.66

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IRON0012-003 07/01/2022

BERKSHIRE (Lee)

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

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IRON0012-004 07/01/2022

BERKSHIRE (Remainder of County)

	Rates	Fringes
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## Ironworkers:

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

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LAB00022-002 12/01/2021

## FRANKLIN (Orange, Warwick)

	Rates	Fringes
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## Laborers:

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

## LABORERS CLASSIFICATIONS

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

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

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

GROUP 4: Blaster; powderman

GROUP 5: Precast floor and roof, plank erector

GROUP 6: Asbestos Abatement, Toxic and Hazardous waste  
laborers

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LAB00022-003 12/01/2021

	Rates	Fringes
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## Plasterer tender

BARNSTABLE, BRISTOL,  
DUKES, ESSEX, NANTUCKET,  
MIDDLESEX (with the  
exception of Arlington,  
Belmont, Burlington,  
Cambridge, Everett,  
Malden, Medford, Melrose,  
Reading, Somerville,  
Stoneham, Wakefield,  
Winchester, Winthrop and  
Woburn); NORFOLK (with the  
exception of Brookline

Dedham and Milton) COUNTIES.\$ 35.41	26.59
SUFFOLK COUNTY (Boston, Chelsea, Revere, Winthrop, Deer Island, Nut Island); MIDDLESEX COUNTY (Arlington, Belmont, Burlington, Cambridge, Everett, Malden, Medford, Melrose, Reading, Somerville, Stoneham, Wakefield, Winchester, Winthrop and Woburn only); NORFOLK COUNTY (Brookline, Dedham, and Milton only)....\$ 41.18	
	27.52

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LAB00473-001 12/01/2021

BERKSHIRE COUNTY, FRANKLIN COUNTY, (THE TOWNS OF ASHFIELD,  
BUCKLAND, CHARLEMONT, HAWLEY, HEATH, AND ROWE ONLY) HAMPSHIRE  
COUNTY (THE TOWNS OF CHESTERFIELD, CUMMINGTON, GOSHEN,  
MIDDLEFIELD, PLAINFIELD, AND WORTHINGTON ONLY)

	Rates	Fringes
Laborers:.....	\$ 28.66	23.57

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LAB00596-001 12/01/2021

HAMPDEN COUNTY, HAMPSHIRE COUNTY (WITH THE EXCEPTION OF  
CHESTERFIELD, CUMMINGTON, GOSHEN, MIDDLEFIELD, PLAINFIELD, AND  
WORTHINGTON) FRANKLIN COUNTY (WITH THE EXCEPTION OF ASHFIELD,  
BUCKLAND, CHARLEMONT, HAULY, HEATH, ORANGE, ROWE AND WARWICK)

	Rates	Fringes
Laborers:		
GROUP 1.....	\$ 32.50	26.02
GROUP 2.....	\$ 32.75	26.02
GROUP 3.....	\$ 33.25	26.02
GROUP 4.....	\$ 33.25	26.02
GROUP 5.....	\$ 33.50	26.02

#### LABORERS CLASSIFICATIONS

GROUP 1: Laborers, carpenter tenders, wrecking laborers

GROUP 2: Asphalt rakers, carbide core driller operators,  
chain saw operators, pipelayers, jackhammer and paving  
breaker operators, Barco type jumping tampers, laser beam  
operators, concrete pump operators, mason tenders,  
motorized mortar mixers, ride-on motorized buggy operators,  
wagon drill operators

GROUP 3: precast floor and roof plank erectors, sign  
erectors, asbestos removal laborers, haz-mat laborers

GROUP 4: Air track operators, block pavers, rammers and curb  
setters, hydraulic and similar self-powered drills

GROUP 5: Powderman and blaster

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MARB0097-001 03/01/2012



	Rates	Fringes
MARBLE FINISHER.....	\$ 28.43	25.85
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PAIN0011-008 06/01/2022		

	Rates	Fringes
GLAZIER.....	\$ 40.78	23.40

## FOOTNOTE:

A. PAID HOLIDAY: LABOR DAY (provided employee has worked any part of the week prior to Labor Day and any part of the week after Labor Day)

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PAIN0035-007 07/01/2019

	Rates	Fringes
PAINTER		
NEW CONSTRUCTION:		
Brush, Taper.....	\$ 32.33	26.35
Spray, Sandblast.....	\$ 34.03	27.00
REPAINT:		
Brush, Taper.....	\$ 29.65	26.35
Spray, Sandblast.....	\$ 31.35	27.00
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PLUM0004-003 09/01/2022

FRANKLIN (Orange)

	Rates	Fringes
Plumber and Steamfitter.....	\$ 50.50	27.67
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PLUM0104-004 09/17/2022		

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

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

## FOOTNOTE:

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

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PLUM0104-009 09/17/2022

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

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

## FOOTNOTE FOR PLUMBERS &amp; STEAMFITTERS:

A. Paid holidays: Independence Day and Labor Day, provided

the employee has been employed seven days prior to the holiday by the same employer.

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ROOF0248-001 07/16/2022

All tear-off and/or removal (of any types of roofing), and all spudding, sweeping, vacuuming and/or cleanup of any and all areas of any type where a roof is to be relaid.

	Rates	Fringes
Roofers:		
Composition Roofers & Damp Waterproofers.....	\$ 33.16	28.30
Pitch,Slate, Tile and Precast Concrete.....	\$ 37.66	27.90

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SFMA0550-003 01/01/2023

	Rates	Fringes
SPRINKLER FITTER.....	\$ 58.50	34.86

a. PAID HOLIDAYS: Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day, provided the employee has been in the employment of a contractor 20 working days prior to any such paid holidays.

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SHEE0063-001 01/01/2022

	Rates	Fringes
Sheet metal worker.....	\$ 38.01	32.21

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TEAM0379-001 08/01/2022

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

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

#### TRUCK DRIVERS CLASSIFICATIONS

Group 1: Station wagons; panel trucks; and pickup trucks

Group 2: Two axle equipment; & forklift operator

Group 3: Three axle equipment and tireman

Group 4: Four and Five Axle equipment

Group 5: Specialized earth moving equipment under 35 tons  
other than conventional type trucks; low bed; vachual;  
mechanics, paving restoration equipment

Group 6: Specialized earth moving equipment over 35 tons

Group 7: Trailers for earth moving equipment (double hookup)

#### FOOTNOTES:

A. PAID HOLIDAYS: New Year's Day, Washington's Birthday,  
Memorial Day, Independence Day, Labor Day, Patriot's Day,  
Columbus Day, Veteran's Day, Thanksgiving Day and Christmas  
Day

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

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

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

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

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

## Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

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

## Survey Rate Identifiers

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

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

## Union Average Rate Identifiers

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

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

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## WAGE DETERMINATION APPEALS PROCESS

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

be:

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

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

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

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

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

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

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

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

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

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

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END OF GENERAL DECISIO"

## EXHIBIT 2

ENGINEER'S PLANS    SEE UNDER SEPARATE COVER