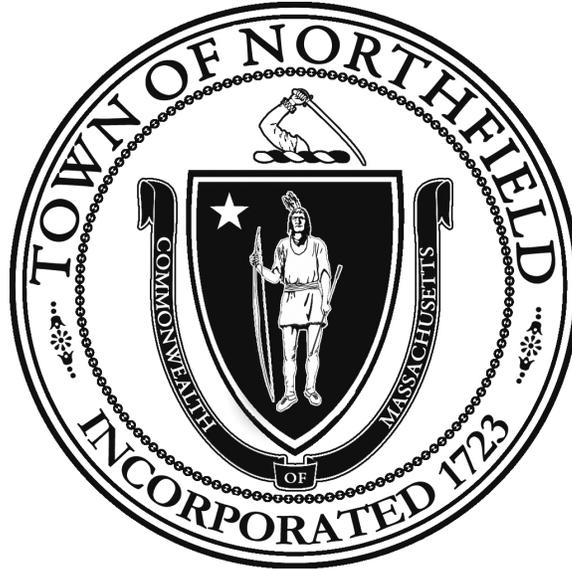


PROJECT MANUAL

TOWN HALL WOOD PELLET BOILER PROJECT

Northfield, Massachusetts



Town of Northfield
69 Main Street
Northfield, Massachusetts 01360

PRIME DESIGNER - Mechanical Engineer

Bowman Engineering Inc.
P.O. Box 410
Greenfield, MA 01302
413-303-0238
FAX 413-604-0139

Date: 23 October 2015

BID SET NO. _____

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END OF LIST

ADVERTISEMENT

The **Town of Northfield**, the Awarding Authority, invites sealed bids from **General Contractors** for the **Town Hall Wood Pellet Boiler Project** in Northfield, Massachusetts, in accordance with the documents prepared by **Bowman Engineering, Inc.** dated 10/23/15.

The Project consists of upgrading the existing heating plant arrangement and installing one new wood pellet fired boiler. The new wood pellet boiler will require new venting. A buffer tank will be installed to provide additional volume to the heating loop. The work also includes the replacement of the existing expansion tanks, circulators and other appurtenances. The construction start date is 1 April 2016.

The work is estimated to cost **\$139,000**.

Bids are subject to M.G.L. c.149 §44A-J & to minimum wage rates as required by M.G.L. c.149 §§26 to 27H inclusive.

General bidders must be certified by the Division of Capital Asset Management (DCAM) in the category of **Mechanical**.

General Bids will be received until **23 December 2015 at 2:00 p.m.** and publicly opened, forthwith.

All Bids should be delivered to: **Town of Northfield, Town Hall, 69 Main Street, Northfield, MA 01360** and received no later than the date & time specified above.

General bids and sub-bids shall be accompanied by a bid deposit that is not less than five (5%) percent of the greatest possible bid amount (considering all alternates), and made payable to the **Town of Northfield**.

Bid Forms and Contract Documents will be available for pick-up at **Northfield Town Hall, 69 Main Street, Northfield, MA**.

There is a plan deposit of **\$25.00** per set (maximum of 2 sets) payable to the Awarding Authority.

Deposits must be a certified or cashier's check, or money order. This deposit will be refunded for up to two sets for general bidders and for one set for sub-bidders upon return of the sets in good condition within thirty (30) days of receipt of general bids. Otherwise the deposit shall be the property of the Awarding Authority.

Additional sets may be purchased for **\$25.00**

Bidders requesting Contract Documents to be mailed to them shall include a separate check for **\$15.00** per set, payable to the Awarding Authority, to cover mail handling costs.

A pre-bid conference/site visit shall be held on **17 December 2015 at 10:00 a.m.** (69 Main Street, Northfield, MA).

The Contract Documents may be seen in person at:

Northfield Town Hall
69 Main Street
Northfield, MA 01360
413-498-2901 x15

INSTRUCTIONS TO BIDDERS

ARTICLE 1 - BIDDER'S REPRESENTATION

- 1.1 Each General Bidder or Sub-bidder (hereinafter called the "**Bidder**") by making a bid or sub-bid (hereinafter called "**bid**") represents that:
1. The Bidder has read and understands the Contract Documents and the bid is made in accordance therewith.
 2. The Bidder has visited the site and is familiar with the local conditions under which the Work has to be performed.
- 1.2 Failure to so examine the Contract Documents and site will not relieve any Bidder from any obligation under the bid as submitted.

ARTICLE 2 - GENERAL BIDDER'S AND FILED SUB-BIDDER'S CERTIFICATION

- 2.1 General bids shall be submitted with the following:
1. A Certificate of Eligibility on the appropriate form prescribed and issued by the Division of Capital Asset Management and Maintenance (DCAM), showing that the Bidder is eligible to bid on projects of this size in the specified category of work; and
 2. A Contractor Update Statement, DCAM Form CQ3.
 3. The Contractor Update Statement (CQ3) is not a public record as defined in DCAM regulation 810 CMR 8.06- and will not be open to public inspection.
- 2.2 Filed sub-bids shall be submitted with the following:
1. A Sub-Bidder Certificate of Eligibility on the appropriate form prescribed and issued by DCAM showing that the sub-bidder is eligible to bid on public projects in the specified category of work; and
 2. A Sub-Bidder Update Statement on a form prescribed by DCAM.
- 2.3 It is the Sub-Bidder's responsibility to obtain the necessary forms from DCAM and make application in sufficient time for evaluation of the application and issuance of a Sub-Bidder Certificate of Eligibility prior to bid.
- 2.4 The Sub-Bidder Update Statement is not a public record as defined in DCAM regulation 810 CMR 8.06 and will not be open to public inspection.
- 2.5 **Be advised that a new Massachusetts law has been enacted that requires all employees who work on Massachusetts public works construction sites must have no less than 10 hours of OSHA-approved safety and health training. See Chapter 306 of the Acts of 2004, which will become effective July 1, 2006.**
1. **This requirement will apply to any general bid or sub bid submitted on or after July 1, 2006 and to any contract awarded on or after July 1, 2006.**
 2. This law directs the Massachusetts Attorney General to restrain the award of construction contracts to any contractor who is in violation to this requirement and to restrain the performance of these contracts by non-complying contractors.
 3. The Contractor and all subcontractors on this project will be required to provide certification of this compliance with this requirement in accordance with the provisions of Section 01100 of these Contract Documents. Non-compliance with this new Massachusetts Law will disqualify you from bidding on public contracts.

ARTICLE 3 - MBE AND WBE PARTICIPATION - NOT USED

ARTICLE 4 - REQUESTS FOR INTERPRETATION

- 4.1 Bidders shall promptly notify the Prime Designer of any ambiguity, inconsistency, or error which they may discover upon examination of the Contract Documents, the site, and local conditions.
- 4.2 Bidders requiring clarification or interpretation of the Contract Documents shall make a written request to the Designer. The Designer will answer such requests if received seven (7) calendar days before the date for receipt of the bids.
- 4.3 Interpretation, correction, or change in the Contract Documents will be made by written Addendum which will become part of the Contract Documents. Neither the Awarding Authority nor the Prime Designer will be held accountable for any oral interpretations, corrections, or changes.
- 4.4 Addenda will be mailed by the Designer by U.S Postal Service, certificate of mailing, to every individual or firm on record as having taken a set of Contract Documents.
- 4.5 Copies of addenda will be made available for inspection at the locations listed in the Advertisement where Contract Documents are on file.

ARTICLE 5 - PREPARATION AND SUBMISSION OF BIDS

5.1 Forms and Bid Preparation

Bids shall be submitted on the "**Form for General Bid**" or the "**Form for Sub-Bid**", as appropriate, furnished at no cost by the Awarding Authority. The forms enclosed in the Project Manual shall not be extracted or used. Additional forms are available at the location listed in the Advertisement.

- 5.1.1 All entries on the bid form shall be made by typewriter or in ink.
- 5.1.2 Sums shall be expressed in both words and figures in the space indicated on the bid form. Where there is a discrepancy between the bid sum expressed in words and the bid sum expressed in figures, the words shall control.
- 5.1.3 If the requirement of Performance and Payment Bonds for filed sub-contractors is left blank by the General Bidder on the Form for General Bid, the Awarding Authority shall interpret this as a "yes". No increase in contract price will be allowed for providing these bonds.
- 5.1.4 Costs for subcontractor's bond premiums shall be paid for by the General Contractor in accordance with M.G.L. c.149 §44F.

5.2 Bid Deposits shall be:

- 5.2.1 at least five percent (5%) of the greatest possible bid amount, considering all alternates;
- 5.2.2 made payable to the **Town of Northfield**;
- 5.2.3 conditioned upon faithful performance by the principal of the agreements contained in the bid, and
- 5.2.4 in the form of:
 - .1 cash,
 - .2 certified check, treasurer's or cashier's check issued by a responsible bank or trust company, or
 - .3 a bid bond issued by a surety company licensed to do business in the Commonwealth of Massachusetts.
- 5.2.5 retained until the execution and delivery of the Owner/Contractor Agreement if they represent the bid deposit of one of the three (3) lowest responsible and eligible General Bidders or one of the three (3) lowest Sub-bidders in a filed sub-bid trade, or a sub-bidder listed by one of the three (3) lowest General Bidders.

5.3 Delivery of Filed Sub-Bids

Sub-bids, including the bid deposit, DCAM Sub-Bidder Certificate of Eligibility and a signed DCAM Sub-Bidder Update Statement shall, be enclosed in a sealed envelope with the following plainly marked on the outside:

Filed Sub-Bid for:

- **Name of Project and Project Number**
- **Sub-bid Section Number**

- Trade
- Sub-bidder's Name, Business Address, and Phone Number

5.4 Delivery of General Bids

General Bids, including the bid deposit, DCAM Certificate of Eligibility and Update Statement (CQ3) shall be enclosed in a sealed envelope with the following plainly marked on the outside:

General Bid for:

- Name of Project and Project Number
- Bidder's Name, Business Address, and Phone Number

5.4.1 Date and time for receipt of bids is set forth in the Advertisement.

5.4.2 Timely delivery of a bid to the location designated shall be the full responsibility of the Bidder.

5.5 Sub-Trade Solicitations

5.5.1 If the General Bidders are instructed to carry an amount for a given sub-trade listed under Item 2, General Bidder's shall list the sub-trade, and amount provided by the Awarding Authority. The line under **bonds required** on the General Bid Form should be left blank or marked N/A in order for subparagraph 5.5.2.2 to be applicable.

5.5.2 Upon solicitation of a subcontractor to perform the work required by the sub-trade as mentioned in subparagraph 5.5.1, the selected General Contractor's contract amount will be adjusted as follows:

- .1 The difference between the subcontract amount and the amount carried in the bid.
- .2 The total cost of the subcontractor's bonds, if the selected General Contractor requires such bonds after the solicitation is completed and if the selected General Contractor complied with 5.4.1 above, and
- .3 The resultant cost difference for General Contractor's Bonds premiums.

5.5.3 Overhead and Profit for supervision of the sub-trade in question shall be included by all General Bidders in Item 1.

5.5.4 Additional overhead and profit is not allowed on the incremental difference as stated in M.G.L. c.149 §44F (4)(a)(2) nor on the costs for the additional bond premiums.

ARTICLE 6 - ALTERNATES

6.1 Each General Bidder shall acknowledge Alternates in Section C on the Form for General Bid by entering the dollar amount of addition or subtraction necessitated by each Alternate.

6.2 In the event an Alternate does not involve a change in the amount of the base bid, the Bidder shall so indicate by writing "**No Change**", or "**N/C**" or "**0**" in the space provided for that Alternate.

6.3 Sub-bidders shall enter on the Form for Sub-bid the amount of addition or subtraction necessitated by each Alternate which pertains to the work of that trade. If an Alternate does not involve a change in the bid amount so indicate by writing "**No Change**", "**N/C**" or "**0**".

If the alternate does not affect your category of work so indicate by writing "**N/A**".

6.4 General Bidders shall enter on the Form for General Bid a single amount for each Alternate which shall consist of the Sub-bidders' amounts and the amount for work performed by the General Contractor.

6.5 The low Bidder will be determined on the basis of the sum of the base bid and the accepted alternates.

ARTICLE 7 - WITHDRAWAL OF BIDS

7.1 Before Opening of Bids

7.1.1 Any bid may be withdrawn prior to the time designated for receipt of bids upon written request. Withdrawal of bids must be confirmed over the Bidder's signature by written notice post-marked or sent by facsimile on or before the date and time set for receipt of bids.

7.1.2 Withdrawn bids may be resubmitted up to the time designated for the receipt of bids.

7.2 After Opening of Bids

Bidders may withdraw a bid, without penalty, any time up to the time of Award as defined in paragraph 8.1, and upon demonstrating, to the satisfaction of the Awarding Authority, that a bona fide clerical error was made during the preparation of the bid. Failure to conclusively demonstrate a bona fide clerical error may result in forfeiture of the bid deposit.

7.3 In the event of a general bid withdrawal after opening of bids, the Awarding Authority shall consider the bid from next lowest eligible and responsible bidder.

7.4 Sub-bid Withdrawal/Substitution

7.4.1 **Selection** - Should a filed sub-bidder listed on the Form for General Bid of the selected General Contractor (per Article 8 of these instructions) withdraw its bid, be unable to provide performance and payment bonds as required by the selected General Contractor, or otherwise refuse to sign a subcontract with the selected General Contractor, the Awarding Authority and the selected General Contractor shall consider the other sub-bids to which the Awarding Authority and the selected General Contractor make no objection and substitute a new sub-bidder for such trade.

7.4.2 **Process:** If the selected General Contractor:

.1 **required bonds (on the Form for General Bid) for the sub-bidder who withdrew** then the selected General Contractor's contract amount shall be adjusted to account for:

.1 the difference between the amount of the sub-bid listed on the Form for General Bid and the amount of the replacement sub-bid, and

.2 the incremental difference in the cost of the General Contractor bonds premiums, but

.3 there will be no compensation for additional subcontractor bond premiums

.2 **did not require bonds (on the Form for General Bid) for the sub-bidder who withdrew** and now the selected General Contractor wants bonds from the replacement sub-bidder, then the selected General Contractor's contract amount shall be adjusted:

.1 to account for the difference between the amount of the sub-bid listed on the Form for General Bid and the amount of the replacement sub-bid,

.2 the amount for the new sub-bidder's performance and payment bonds, and

.3 the incremental difference in the cost of the General Contractor bond premiums.

7.4.3 There shall be no adjustment to the selected General Contractor's contract amount except as set forth in 7.4.2.1 and 7.4.2.2. Additional overhead and profit is not allowed on the incremental difference in the sub-bids or on the costs for the additional bond premiums.

ARTICLE 8 - CONTRACT AWARD

8.1 **Award** means both the determination and selection of the lowest, responsible and eligible bidder, by Awarding Authority.

8.2 The Awarding Authority will award the contract to the lowest responsible and eligible bidder within thirty days, Saturdays, Sundays, and legal holidays excluded after the opening of bids in accordance with M.G.L. c.149 §44A.

8.3 The Contract will be awarded to the lowest responsible and eligible Bidder, except in the event of substitution as provided under M.G.L. c.149 §§44E and 44F, in which cases the procedure as required by said sections shall govern the award of the Contract.

8.4 The award of this Contract is subject to the approval of the Awarding Authority. Contracts without approval shall not be considered valid.

8.5 The Awarding Authority reserves the right to waive any informalities in or to reject any or all Bids if it be in the public interest to do so.

8.6 The Awarding Authority also reserves the right to reject any sub-bid if it determines that such sub-bid does not represent the bid of a person competent to perform the work as specified, or if less than three sub-bids are received for a sub-trade, or if bid prices are not reasonable for acceptance without

further competition.

- 8.7** As used herein, the term "lowest responsible and eligible bidder" shall mean the General Bidder whose bid is the lowest of those Bidders demonstrably possessing the skill, ability, and integrity necessary for the faithful performance of the work, and who meets the requirements for Bidders set forth in M.G.L. c.149 §44A-J and is not debarred from bidding under M.G.L. c.149 §44C; and who shall certify that they are able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work.

ARTICLE 9 - FORMS REQUIRED FOR CONTRACT APPROVAL

- 9.1** Upon Award, the General Bidder shall complete the following forms to ensure prompt contract validation. These forms will be provided to the selected General Bidder by the Awarding Authority. Submit (3) originals of each.
- 9.2 Owner/Contractor Agreement and Form of Corporate Vote.**
- 9.3 Form of Contractor's Equal Employment Certification in accordance with Article 14 of the General Conditions.**
Form of Sub-Contractor's Equal Employment Certification in accordance with Article 14 of the General Conditions.
- 9.4.1 Form of Performance Bond and Form of Payment Bond** must be submitted by the General Contractor on the Awarding Authority's form, in accordance with Article 18 of the General Conditions. The dates on the bonds must coincide with the contract date, and a current Power-of-Attorney must be attached to each bond.
- 9.4.2 Performance and Payment Bonds** must also be submitted for all filed subcontractors, if required by the General Bidder on its Form for General Bid, in the total amount of the subcontract payable to the General Contractor.
- 9.5.1 Insurance Certificates** for the General Contractor and all **filed subcontractors** are required and must be submitted in accordance with Article 16 of the General Conditions.
- 9.5.2** General Contractors must indicate on special perils insurance or installation floater if stored materials are covered.
- 9.6.1 Form of Subcontract for all filed subcontractors** - executed and submitted on the statutory subcontract form.
- 9.6.2 Statement of Management on Internal Accounting Controls and a Statement prepared by a CPA** expressing an opinion to the state of Management Controls, as required by M.G.L. c.30 §39R. This applies to the General Contractor only.

ARTICLE 10 - CONTRACT VALIDATION

- 10.1** The Owner-Contractor Agreement shall not be valid until signed by Awarding Authority.
- 10.2** The Notice to Proceed for construction shall not be issued until the Owner/Contractor Agreement has been validated by the Awarding Authority.
- 10.3** Incomplete or unacceptable submissions of forms required by paragraphs 9.2 - 9.6.2 will delay the validation of the Owner/Contractor Agreement by the Awarding Authority.

END OF SECTION

FORM OF GENERAL BID

TO THE AWARDING AUTHORITY

A. The undersigned proposes to furnish all labor and materials required for Town Hall Wood Pellet Boiler Project for the PROJECT

Town of Northfield in Northfield, Massachusetts

in accordance with Contract Documents prepared by **Bowman Engineering, Inc.**
Name of Engineer/Architect

For the contract price specified below, subject additions and deductions according to the terms of the specifications

B. This bid includes addenda number(s) _____

C. The proposed contract price is:

_____ Dollars \$ _____
Bid Amount in Words
Bid Amount in Numbers

For Alternate	No.	Add \$	Subtract \$
	_____	_____	_____
	No. _____	\$ _____	\$ _____
	_____	_____	_____
	No. _____	\$ _____	\$ _____
	_____	_____	_____
	No. _____	\$ _____	\$ _____
	_____	_____	_____
	No. _____	\$ _____	\$ _____

Each Alternate shall be listed separately

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

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

TOTAL OF ITEM 1 \$ _____

ITEM 2. Sub-bids as follows:

Sub-trade	Name of Filed Sub-bidder	Sub-bid Amount	Bond Required	
			Yes	No
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

TOTAL OF ITEM 2 \$ _____

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

The undersigned agrees that if selected as general contractor, they will promptly confer with the awarding authority on the question of sub-bidders; and that the awarding authority may substitute for any sub-bid listed above a sub-bid filed with the awarding authority by another sub-bidder for the sub-trade against whose standing and ability the undersigned makes no objection; and that the undersigned will use all such finally selected sub-bidders at the amounts named in their respective sub-bids and be in every way as responsible for them and their work as if they had been originally named in this general bid, the total contract price being adjusted to conform thereto.

- E. The undersigned agrees that, if selected as general contractor, we will within five days, Saturdays, Sundays, and legal holidays excluded, after presentation thereof by the awarding authority, execute a contract in accordance with the terms of this bid and furnish a performance bond and also a labor and materials or payment bond, each of a surety company qualified to do business under the laws of the Commonwealth and satisfactory to the awarding authority and each in the sum of the contract price, the premiums for which are to be paid by the general contractor and are included in the contract price.

The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work; that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and that he will comply fully with all laws and regulations applicable to awards made subject to section 44A. **The Safety Training requirement in this paragraph is effective July 1, 2006.**

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

Name of General Bidder

Signature 

BY:

Signature & Title of person signing bid

Date:

Business Address

(City and State)

Note: If the bidder is a corporation, indicate state of incorporation under signature, and affix corporate seal; if a partnership, give full names and residential addresses of partners if different from business addresses.

SPECIAL NOTICE TO AWARDING AUTHORITY
BIDDERS' UPDATE STATEMENTS ARE NOT PUBLIC RECORDS AND
ARE NOT OPEN TO PUBLIC INSPECTION (M.G.L. C.149, §44D)

EFFECTIVE MARCH 30, 2010

Commonwealth of Massachusetts
Division of Capital Asset Management
PRIME/GENERAL CONTRACTOR
UPDATE STATEMENT

TO ALL BIDDERS AND AWARDING AUTHORITIES

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

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

AWARDING AUTHORITIES

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

BIDDER'S AFFIDAVIT

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

Bid Date

Print Name of Prime/General Contractor

Project Number (or
name if no number)

Business Address

Awarding Authority

Telephone Number

SIGNATURE⇒

Bidder's Authorized Representative

INSTRUCTIONS

INSTRUCTIONS TO BIDDERS

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

INSTRUCTIONS TO AWARDING AUTHORITIES

Determination of Bidder Qualifications

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

Bidding Limits

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

Aggregate Work Limit: The annual value of the work to be performed on the contract for which the bid is submitted,

when added to the annual cost to complete the bidder's other currently held contracts, may not exceed the bidder's Aggregate Work Limit. Use the following procedure to determine whether the low bidder is within its Aggregate Work Limit:

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

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

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

Step 3 Add the annualized value of all of the bidder's incomplete contract work (the total of column 9 on page 5) to the annual dollar value of the work to be performed on your project. **The total may not exceed the bidder's Aggregate Work Limit.**

Correction of Errors and Omissions in Update Statements

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

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

PART 1 - COMPLETED PROJECTS

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

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

Attach additional sheets if necessary

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

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

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

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

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

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

PART 2 - CURRENTLY HELD CONTRACTS

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

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

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

\$ _____

Column 8

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

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

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

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

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

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

PART 3 - PROJECT PERFORMANCE

For Parts 3 and 4, if you answer YES to any question, please provide on a separate page a complete explanation. Information you provide herein must supplement the Application for your most recently issued (not extended or amended) DCAM Certificate of Eligibility. You must report all requested information not previously reported on that DCAM Application for Prime/General Certificate of Eligibility. Include all details [project name(s) and location(s), names of all parties involved, relevant dates, etc.].

	YES	NO
1. Has your firm been terminated on any contract prior to completing a project or has any officer, partner or principal of your firm been an officer, partner or principal of another firm that was terminated or failed to complete a project?	<input type="checkbox"/>	<input type="checkbox"/>
2. Has your firm failed or refused either to perform or complete any of its work under any contract prior to substantial completion?	<input type="checkbox"/>	<input type="checkbox"/>
3. Has your firm failed or refused to complete any punch list work under any contract?	<input type="checkbox"/>	<input type="checkbox"/>
4. Has your firm filed for bankruptcy, or has any officer, principal or individual with a financial interest in your current firm been an officer, principal or individual with a financial interest in another firm that filed for bankruptcy?	<input type="checkbox"/>	<input type="checkbox"/>
5. Has your surety taken over or been asked to complete any of your work under any contract?	<input type="checkbox"/>	<input type="checkbox"/>
6. Has a payment or performance bond been invoked against your current firm, or has any officer, principal or individual with a financial interest in your current firm been an officer, principal or individual with a financial interest in another firm that had a payment or performance bond invoked?	<input type="checkbox"/>	<input type="checkbox"/>
7. Has your surety made payment to a materials supplier or other party under your payment bond on any contract?	<input type="checkbox"/>	<input type="checkbox"/>
8. Has any subcontractor filed a demand for direct payment with an awarding authority for a public project on any of your contracts?	<input type="checkbox"/>	<input type="checkbox"/>
9. Have any of your subcontractors or suppliers filed litigation to enforce a mechanic's lien against property in connection with work performed or materials supplied under any of your contracts?	<input type="checkbox"/>	<input type="checkbox"/>
10. Have there been any deaths of an employee or others occurring in connection with any of your projects?	<input type="checkbox"/>	<input type="checkbox"/>
11. Has any employee or other person suffered an injury in connection with any of your projects resulting in their inability to return to work for a period in excess of one year?	<input type="checkbox"/>	<input type="checkbox"/>

PART 4 - Legal or Administrative Proceedings; Compliance with Laws

Please answer the following questions. Information must supplement all judicial and administrative proceedings involving bidder’s firm, which were instituted or concluded (adversely or otherwise) since your firm’s Application for your most recently issued (not extended or amended) Certificate of Eligibility. You must report all requested information not previously reported on that DCAM Application for Prime/General Certificate of Eligibility.

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

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

If you answer YES to any question, on a separate page provide a complete explanation of each proceeding or action and any judgment, decision, fine or other sanction or result. Include all details (name of court or administrative agency, title of case or proceeding, case number, date action was commenced, date judgment or decision was entered, fines or penalties imposed, etc.).

	YES	NO
1. Have any civil, judicial or administrative proceedings involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled relating to the procurement or performance of any construction contract, including but not limited to actions to obtain payment brought by subcontractors, suppliers or others?	<input type="checkbox"/>	<input type="checkbox"/>
2. Have any criminal proceedings involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled relating to the procurement or performance of any construction contract including, but not limited to, any of the following offenses: fraud, graft, embezzlement, forgery, bribery, falsification or destruction of records, or receipt of stolen property?	<input type="checkbox"/>	<input type="checkbox"/>
3. Have any judicial or administrative proceedings involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled relating to a violation of any state’s or federal procurement laws arising out of the submission of bids or proposals?	<input type="checkbox"/>	<input type="checkbox"/>
4. Have any judicial or administrative proceedings involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled relating to a violation of M.G.L. Chapter 268A, the State Ethics Law?	<input type="checkbox"/>	<input type="checkbox"/>

PART 4 - Legal or Administrative Proceedings; Compliance with Laws (continued)

	YES	NO
5. Have any judicial or administrative proceedings involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled relating to a violation of any state or federal law regulating hours of labor, unemployment compensation, minimum wages, prevailing wages, overtime pay, equal pay, child labor or worker's compensation?	<input type="checkbox"/>	<input type="checkbox"/>
6. Have any judicial or administrative proceedings involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled relating to a violation of any state or federal law prohibiting discrimination in employment?	<input type="checkbox"/>	<input type="checkbox"/>
7. Have any judicial or administrative proceedings involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled relating to a claim of repeated or aggravated violation of any state or federal law regulating labor relations?	<input type="checkbox"/>	<input type="checkbox"/>
8. Have any proceedings by a municipal, state, or federal agency been brought, concluded, or settled relating to decertification, debarment, or suspension of your firm or any principal or officer or anyone with a financial interest in your firm from public contracting?	<input type="checkbox"/>	<input type="checkbox"/>
9. Have any judicial or administrative proceedings involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled relating to a violation of state or federal law regulating the environment?	<input type="checkbox"/>	<input type="checkbox"/>
10. Has your firm been fined by OSHA or any other state or federal agency for violations of any laws or regulations related to occupational health or safety? Note: this information may be obtained from OSHA's Web Site at www.osha.gov	<input type="checkbox"/>	<input type="checkbox"/>
11. Has your firm been sanctioned for failure to achieve DBE/MBE/WBE goals, workforce goals, or failure to file certified payrolls on any public projects?	<input type="checkbox"/>	<input type="checkbox"/>
12. Other than previously reported in the above paragraphs of this Section I, have any administrative proceedings or investigations involving your firm or a principal or officer or anyone with a financial interest in your firm been brought, concluded, or settled by any local, state or federal agency relating to the procurement or performance of any construction contract?	<input type="checkbox"/>	<input type="checkbox"/>
13. Are there any other issues that you are aware which may affect your firm's responsibility and integrity as a building contractor?	<input type="checkbox"/>	<input type="checkbox"/>

PART 5 - SUPERVISORY PERSONNEL

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

NAME	TITLE OR FUNCTION

PART 6 - CHANGES IN BUSINESS ORGANIZATION OR FINANCIAL CONDITION

Have there been any changes in your firm’s business organization, financial condition or bonding capacity since the date your current Certificate of Eligibility was issued? Yes No
If YES, attach a separate page providing complete details.

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

Attach here a copy of the list of completed construction projects which was submitted with your firm’s DCAM Application for your most recently issued (not extended or amended) DCAM Certificate of Eligibility. The Attachment must include a complete copy of the entire Section G – “Completed Projects” and the final page – “Certification” (Section J) containing the signature and date that the Completed Projects list (Section G) was submitted to the Division of Capital Asset Management.

OWNER-CONTRACTOR AGREEMENT

This agreement made the _____ day of _____, 2016 by and between the **Town of Northfield**
 Hereinafter called the "Owner", and _____ hereinafter called the "Contractor"
Name of Contractor

Witnesseth, that the Owner and the Contractor, for the consideration herein under named, agree as follows:

Article 1. Scope of Work: The Contractor shall perform all Work required by the Contract Documents for
 Town Hall Wood Pellet Boiler Project _____ referred to in the Contract Documents prepared by
Description of Project
 Bowman Engineering, Inc. _____ acting as and referred to as the "Designer"
Architect/Engineer

Article 2. Time of Completion: The Contractor shall commence work under this Contract on the date specified in the
 written Notice to Proceed" and shall bring the Work to Substantial Completion within 60 calendar days of said date
Days
 Damages for delays in the performance of the Work shall be in accordance with Article 9 of the General Conditions of
 the Contract.

Article 3. Contract Sum: The Owner shall pay the Contractor, in current funds, for the performance of the Work,
 _____ Dollars \$ _____
Contract Amount in Words Contract Amount in Dollars

The Contract Sum is divided as follows:

Item 1: The Work of the Contractor, being all Work other than that covered by Item 2 \$ _____

Item 2: Subcontractors as follows

	Section - Trade	Subcontractor	Amount
1	_____	_____	\$ _____
2	_____	_____	\$ _____
3	_____	_____	\$ _____
4	_____	_____	\$ _____
5	_____	_____	\$ _____
6	_____	_____	\$ _____
7	_____	_____	\$ _____
8	_____	_____	\$ _____
9	_____	_____	\$ _____
10	_____	_____	\$ _____
	Total for Item 2		\$ _____

Article 4. The Contract Documents: The following, together with this Agreement, form the Contract and all are
 as fully a part of the contract as if attached to this Agreement or repeated herein: The Advertisement, Bidding
 Documents, Contract Forms, Conditions of the Contract, and Specifications as enumerated in the Table of
 Contents, the drawings as enumerated in the List of Contract Drawings, publication known as the Construction
 Handbook, and all Modifications issued after execution of the Contract. Terms used in this Agreement which are
 defined in the Conditions of the Contract shall have the meanings designated in those Conditions.

Article 5. Alternates: The following Alternates have been accepted and their costs are included in the Contract Sum stated in Article 3 of this Agreement: **Alternate No(s):** **and**

Article 6. REAP Certification: Pursuant to M.G.L. c.62(c), sec.49(a), the individual signing this Contract on behalf of the Contractor, hereby certifies, under the penalties of perjury, that to the best of their knowledge and belief the Contractor has complied with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

Article 7. Worker Documentation Certification. In accordance with Executive Order 481 the undersigned further certifies under the penalties of perjury that the Contractor shall not knowingly use undocumented workers in connection with the performance of this contract; that pursuant to federal requirements, the Contractor shall verify the immigration status of all workers assigned to such contract without engaging in unlawful discrimination; and that the it shall not knowingly or recklessly alter, falsify, or accept altered or falsified documents from any such worker(s). The Contractor understands and agrees that breach of any of these terms during the contract period may be regarded as a material breach, subjecting the Contractor to sanctions, including but not limited to monetary penalties, withholding of payments, contract suspension or termination.

Article 8. Validation: This Contract will not be valid until signed by the proper Town authority below.

In Witness Whereof, the Parties Hereto Have Caused This Instrument to be Executed Under Seal.

¹ CONTRACTOR

Town of Northfield

Name of Contractor

Printed Name

Address

Signature and Seal

By: _____
Signature and Seal

Title

Witness _____

Attest:

¹ If a Corporation, attach a notarized copy of the Corporate Vote authorizing signatory to sign Contract.

CERTIFICATE OF VOTE OF AUTHORIZATION

2015

I hereby certify that a meeting of the Board of Directors of the:

NAME OF CORPORATION

duly called and held at _____ on the _____ day of _____ 2015

At which a quorum was present and acting, it was voted that

Name of Corporate Officer

of the _____, be and hereby is authorized to execute and deliver for

and on behalf of the Corporation a Contract with the **Town of Northfield** for
work to be done at Town Hall, 69 Main Street In Northfield, MA.

And to act as principal to execute bonds in connection therewith, which Contract and Bonds were presented to and made part of the records of said meeting.

I further certify that _____ Is duly qualified and acting

Name of Corporate Officer

_____ of the Corporation and that said vote has not been

Title

Repealed, rescinded or amended

A true copy of the record,

ATTEST:

(CORPORATE SEAL)

On this ____ day of _____ 20____, before me, the undersigned Notary Public, personally appeared _____, duly designated by the board of directors and proved to me, through satisfactory evidence of identification, which was _____, that s/he is the person whose name is signed on the foregoing documents, and acknowledged to me that s/he signed it voluntarily for its stated purpose and that it was her/his free act and deed.

Notary Public
My Commission Expires:

Bond No. _____

PERFORMANCE BOND

TOWN OF NORTHFIELD

KNOW ALL MEN BY THESE PRESENTS:

That we, _____ as **Principal**,
and _____ as **Surety**, are held and firmly bound unto
the _____ as **Obligee**, in the sum of
_____ **dollars** \$

to be paid to the Obligee, for which payments, well and truly to be made, we bind ourselves, our respective heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the said **Principal** has made a contract with the **Obligee**, bearing the date of _____ 20__
for the construction of _____ in _____ Massachusetts
Project Title

NOW, the condition of this obligation is such that if the **Principal** and all Subcontractors under said contract shall well and truly keep and perform all the undertakings, covenants, agreement, terms and conditions of said contract on its part to be kept and performed during the original term of said contract and any extensions thereof that may be granted by the Obligee, with or without notice to the **Surety**, and during the life and any guarantee required under the contract, and shall also well and truly keep and perform all the undertakings, covenants, agreements, terms and conditions of any and all duly authorized modifications, alterations changes or additions to said contract that may hereafter be made, notice to the **Surety** of such modifications, alterations, changes or additions being hereby waived, then this obligation shall become null and void; otherwise, it shall remain in full force and virtue.

IN THE EVENT, that the contract is abandoned by the **Principal**, or in the event that the Obligee, under the provisions of Article 19 of the General Conditions of said contract terminates the employment of the **Principal** or the authority of the **Principal** to continue the work, said **Surety** hereby further agrees that said **Surety** shall, if requested in writing by the Obligee, take such action as is necessary to complete said contract.

IN WITNESS WHEREOF, the **Principal** and **Surety** have hereunto set their hands and seals this:

_____ Day of _____ 20 ____

PRINCIPAL

SURETY

BY:

SEAL

BY:

ATTORNEY-IN FACT

ATTEST:

ATTEST

The rate for this bond is _____ % for the first \$ _____ and _____ % for the next \$ _____

The total premium for this bond is \$ _____

PAYMENT BOND

TOWN OF NORTHFIELD

KNOW ALL MEN BY THESE PRESENTS:

That we, _____ as **Principal**,
and _____ as **Surety**, are held and firmly bound unto
the _____, as **Obligee**, in the sum of

_____ dollars \$ _____

to be paid to the Obligee, for which payments, well and truly to be made, we bind ourselves, our respective heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the said **Principal** has made a contract with the **Obligee**, bearing the date of _____ 20__

for the construction of Town Hall Wood Pellet Boiler Project in Northfield, Massachusetts
Project Title

NOW the conditions of this obligation are such that if the **Principal** and all subcontractors under said contract shall pay for all labor performed or furnished and for all materials used or employed in said contract and in any and all duly authorized modifications, alterations, extensions of time, changes or additions to said contract that may hereafter be made, notice to the **Surety** of such modifications, alterations, extensions of time, changes or additions being hereby waived, the foregoing to include any other purposes or items set out in, and to be subject to, provisions of M.G.L. c.30 §39A, and M.G.L. c.149 §29, as amended, then this obligation shall become null and void; otherwise it shall remain in full force and virtue.

IN WITNESS WHEREOF, the **Principal** and **Surety** have hereunto set their hands and seals this:

_____ Day of _____ 20__

PRINCIPAL

SURETY

By: _____

By: _____

_____ eal

_____ Attorney-in Fact

Attest: _____

Attest _____

The rate for this bond is _____ % for the first \$ _____ and _____ % for the next \$ _____

The total premium for this bond is \$ _____

Town

FORM OF CONTRACTOR'S EQUAL EMPLOYMENT CERTIFICATION

This form must be completed and submitted by the Contractor prior to the signing of the Owner-Contractor Agreement.

This certifies that:

Contractor

Street Address

City/State/Zip Code

1. Intends to use the following listed construction trades in the work under this contract:

2. Will comply with the affirmative action steps contained in Article 14 of the Conditions of this Contract; and

3. Will obtain similar certifications from each of its subcontractors and submit to the Owner prior to the award of any subcontract under this contract the subcontractor's certification.

Signature of Authorized Representative of Contractor

Name and Title

Date

GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

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<p>Payment, Final 3.3.1, 5.3.1, 5.3.7, 9.3.3.4, 10.7, 11.2.1, 13.2, 13.4, 16.1</p> <p>Permits 4.16</p> <p>Product Data 4.7, 4.15, 5.3.5</p> <p>Project Representative 5.3.8, 8.7.3, 9.3.2.1</p> <p style="text-align: center;">-R-</p> <p>Retainage 10.3.1, 10.6.2</p> <p style="text-align: center;">-S-</p> <p>Safety 4.20</p> <p>Samples 4.7, 4.8, 4.15, 5.3.5</p> <p>Schedule of Values 10.2</p> <p>Schedule, Construction 4.15.1, 5.5, 7.1.2, 9.4</p> <p>Schedule, Payment 9.4</p> <p>Schedule, Participation 15.2.1, 15.4.1, 15.4.2, 15.4.3, 15.4.4, 15.4.6, 15.4.7, 15.4.9, 15.5.1</p> <p>Site 1.2.1, 2.2.2, 4.4.1, 4.4.2, 4.8.2, 4.9.1, 4.9.2, 4.9.3, 4.9.4, 4.12, 4.15, 4.17.2, 4.17.3, 4.17.4, 4.18, 4.20.3, 4.21.1, 5.3.2, 5.3.8, 6.1.1, 7.1.1, 8.6.2, 10.4.1, 10.6.1.1, 12.4.1, 14.3.4, 19.1.4</p> <p>SOMWBA Article 15</p> <p>Specifications 1.1.1, 1.1.6, 1.3, 4.3.3, 4.7.5, 4.15, 5.3.5, 8.6.3, 9.4.1, 10.2.2, 10.7.1, 11.2.1, 12.4.1</p> <p>Stored Materials 4.9.4, 4.9.6, 10.4</p> <p>Subcontractors Article 6</p> <p>Submittals 4.2.3, 4.7, 4.15, 5.3.5</p> <p>Substantial Completion 5.3.7, 9.6</p> <p>Substitutions, Materials (or equals) 4.6.3, 4.7.5, 4.10.1</p> <p>Substitutions, MBE/WBE 15.4.2, 15.4.4, 15.4.7</p> <p>Superintendent 4.4, 4.20.3, 8.7.3</p> <p>Supervision & Construction Procedures 4.3, 8.3.1</p> <p>Surety 6.2.1, 9.7.4, 15.4.5, 15.5.3, Article 18, 19.1.5</p> <p>Surveys 2.2.2</p> <p style="text-align: center;">-T-</p> <p>Taxes 4.14</p> <p>Termination 3.3.1, 6.2.1, 14.2.1, 14.2.2, 14.6.2.3, 15.4.6, 15.5.3</p> <p>Testing & Inspection 4.8</p> <p style="text-align: center;">-U-</p> <p>Unit Prices 8.3.1</p> <p style="text-align: center;">-W-</p> <p>Warranties 4.10, 5.3.7, 9.6.8, Article 11</p> <p>Weather Protection 4.18</p>
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GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

ARTICLE 1 GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

1.1.1 THE CONTRACT DOCUMENTS

The Contract Documents consist of the Owner-Contractor Agreement, Advertisement, Instructions to Bidders, Bidding Documents, Contract Forms, Conditions of the Contract, Specifications, Drawings, all addenda issued prior to execution of the Contract, and other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Prime Designer.

1.1.2 THE CONTRACT

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification.

1.1.3 THE WORK

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

1.1.4 THE PROJECT

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner or by separate contractors.

1.1.5 THE DRAWINGS

The Drawings are the graphic and pictorial portions of the Contract Documents, wherever located and whenever issued, showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

1.1.6 THE SPECIFICATIONS

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, construction systems, standards, and workmanship for the Work, and performance of related services.

1.2 EXECUTION, CORRELATION, AND INTENT

1.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

1.2.2 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all. Performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the intended results. In case of inconsistent requirements in the Contract Documents, the requirement for the greater quantity or higher quality shall take precedence and shall be the Contract requirement.

1.2.3. Unless otherwise stated in the Contract Documents, words which have well known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

1.2.4. Where reference is made to standards or trade association publications, it shall be considered to refer to the latest edition and revision thereof, if any, in effect on the date the Contract Documents were advertised for bid.

1.3 USE OF DRAWINGS, SPECIFICATIONS, AND OTHER DOCUMENTS

The Drawings, Specifications and other documents prepared by the Prime Designer, and copies thereof furnished to the Contractor, are for use solely with respect to this Project. They are not to be used by the Contractor or any Subcontractor, Sub-subcontractor, or material or equipment supplier on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, the Prime Designer, and the Department.

ARTICLE 2 OWNER

2.1 DEFINITION

The term "Owner", sometimes also referred to as the "Awarding Authority" or "Authority", means the **Town of Northfield** identified in the Owner - Contractor Agreement, organized and existing under the provisions of M.G.L. c.121B.

2.2 INFORMATION AND SERVICES TO BE PROVIDED BY THE OWNER

2.2.1 The Owner will furnish to the Contractor, free of charge, a reasonable number of copies of the Contract Documents for the execution of the Work, including a set for record purposes. In addition, the Owner, through the Prime Designer, will furnish to the Contractor a reproducible transparency and one black line print of detail and clarification drawings issued after the Contract has been awarded. The Contractor shall provide and distribute such number of prints of these transparencies as required for the Contractor's and Subcontractors' use.

2.2.2 The Owner shall furnish available surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site.

2.3 OWNER'S RIGHT TO STOP THE WORK

2.3.1 If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents or persistently fails to carry out the Work in accordance with the Contract Documents, the Owner by written order signed personally or by its authorized agent, may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated.

2.3.2 Stop work orders require the Administrator's prior approval. (See Subparagraph 3.1.2)

2.4 OWNER'S RIGHT TO CARRY OUT THE WORK

2.4.1 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-day period after receipt of written notice from the Prime Designer at the Owner's direction to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies, hire one or more contractors to correct such deficiencies.

2.4.2 In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the cost of correcting such deficiencies, including compensation for the Prime Designer's additional services and expenses made necessary by such default, neglect, or failure. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3 DEPARTMENT

3.1 DEFINITIONS

3.1.1 The term "Department" means the **Town**.

3.1.2 The term "Administrator" means the person appointed by the Department to administer the terms of the Contract for Financial Assistance between the Owner and the Department, who is also empowered to take certain actions under this Agreement. Contractor should address mail to the Administrator c/o the Construction Management Unit.

3.1.3 The term "Construction Advisor" means the person designated by the Administrator to assist the Administrator.

3.2 PROJECT FUNDING

The Work under this Contract is funded by the Town through the Department pursuant to a contract for financial assistance between the Department and the Owner.

3.3 DEPARTMENT'S RESPONSIBILITIES

3.3.1 The Contractor is advised that various actions taken or decisions made by the Owner and/or the Prime Designer under this Contract, require the prior approval and counter-signature of the Administrator. Those actions or decisions include, but are not limited to, the following:

- .1 Approval, substitutions, and final selection of Sub-Bidders pursuant to M.G.L. c.149 §44F
- .2 Change Orders and Construction Change Directives, whether or not they affect a change in the Contract Sum or in the Contract Time.
- .3 Written orders, notices, and approvals given by the Owner pursuant to the Contract Documents or pursuant to any Laws applicable to this Contract, including approval of the Contractor's payment requests.
- .4 Approval of "or equal" submissions and substitutions pursuant to Subparagraph 4.6.3.
- .5 Stop Work order.
- .6 Certificate of Substantial Completion.
- .7 Final payment.
- .8 Termination of Contract.

3.3.2 In any instance where the Contractor requires clarification as to whose approval is required, the Prime Designer shall provide such clarification.

3.3.3 Work undertaken by the Contractor or a Subcontractor at the Owner's or other person's order without the Administrator's countersignature prior to the start of such work shall be considered unauthorized work and shall not be considered cause for extra payment. The Contractor or Subcontractor shall be responsible for performing, at their own expense, corrective measures required by the Prime Designer due to any failure to obtain the prior approval of the Administrator pursuant to Subparagraph 3.3.1.

3.3.4 The Department and its authorized representatives and agents shall at all times have access to, and be permitted to observe and review all Work, materials, payrolls, records of personnel, conditions of employment, invoices of materials, and other relevant data and records maintained by the Contractor on the Project.

ARTICLE 4 CONTRACTOR

4.1 DEFINITION

The Contractor, sometimes referred to as the General Contractor, is the person or entity identified as such throughout the Contract Documents as if singular in number. The term Contractor means the Contractor or its authorized representative.

4.2 REVIEW OF CONTRACT DOCUMENTS & FIELD CONDITIONS BY CONTRACTOR

4.2.1 The Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by the Owner pursuant to Subparagraph 2.2.2 and shall at once report to the Prime Designer errors, inconsistencies, or omissions discovered. The Contractor shall not be liable to the Owner or Prime Designer for damage resulting from errors, inconsistencies, or omissions in the Contract Documents unless the Contractor recognized such error, inconsistency, or omission and knowingly failed to notify the Prime Designer. If the Contractor performs any construction activity knowing it involves a recognized error, inconsistency or omission in the Contract Documents without such notice to the Prime Designer, the Contractor shall assume responsibility for such performance and shall bear the attributable costs for correction.

4.2.2 The Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing activities. Errors, inconsistencies, or omissions discovered shall be reported to the Prime Designer at once.

4.2.3 The Contractor shall perform the Work in accordance with the Contract Documents and submittals approved pursuant to Paragraph 4.7.

4.3 SUPERVISION AND CONSTRUCTION PROCEDURES, COORDINATION, AND CUTTING AND PATCHING

4.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures, and for coordinating all portions of the Work under the Contract.

4.3.2 The Contractor shall be responsible for the proper fitting of all Work and the coordination of the operations of all trades, Subcontractors, or materialmen engaged upon the Work.

4.3.3 All necessary cutting, coring, drilling, grouting, and patching required to fit together the several parts of the Work shall be done by the Contractor, except as may be specifically noted otherwise under any particular filed sub-bid section of the Specifications.

4.3.4 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors, and their agents and employees, and other persons performing portions of the Work.

4.3.5 The Contractor shall be responsible for inspection of portions of Work already performed under this Contract to determine that such portions are in proper condition to receive subsequent Work.

4.3.6 The Contractor shall do engineering required for establishing grades, lines, levels, dimensions, layouts, and reference points for the trades; shall be responsible for maintaining bench marks and other survey marks; and shall replace any bench marks or survey marks which have been disturbed or destroyed.

4.3.7 Unless otherwise required by the Contract Documents, or directed in writing by the Prime Designer, Work shall be done during regular working hours. However, if the Contractor desires to carry on the Work outside of regular working hours or on Saturdays, Sundays, or Massachusetts holidays it shall allow ample time to enable satisfactory arrangements to be made for inspecting Work in progress and shall bear the costs of such inspection. The Owner shall bill the Contractor directly for such costs.

4.3.8 Work done outside of regular working hours without the consent or knowledge of the Prime Designer shall be subject to additional inspection and testing as directed by the Prime Designer. The cost of this inspection and testing shall be paid by the Contractor whether the Work is found to be acceptable or not.

4.4 SUPERINTENDENT

4.4.1 The Contractor shall employ a Superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The Superintendent shall represent the Contractor, and 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 similarly confirmed on written request in each case. The Superintendent shall attend each job meeting.

4.4.2 The Superintendent shall be a competent and responsible employee, satisfactory to the Owner, who is regularly employed by the Contractor and is designated by the Contractor as its representative to be in full time attendance at the Project site throughout the construction of the Work. The Superintendent shall be responsible for coordinating all the Work of the Contractor and the Subcontractors. The Superintendent shall be licensed consistent with the Massachusetts Building Code. The Superintendent's resume shall be submitted to the Owner prior to commencement of construction and must demonstrate to the Owner's reasonable satisfaction that the Superintendent has performed similar duties on previous construction projects similar to the Project.

4.5 LABOR

The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them, and whenever the Owner shall notify the Contractor, in writing, that any worker is, in its opinion, incompetent, unfaithful, disorderly, or otherwise unsatisfactory, such employee shall be discharged from the Work and shall not again be employed on the Project except with the consent of the Owner.

4.6 MATERIALS AND EQUIPMENT

4.6.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

4.6.2 Materials and Equipment to be installed as part of the Contract (both or either of which are hereinafter referred to as "Materials") shall be new, unused, of recent manufacture, assembled, and used in accordance with the best construction practices.

4.6.3 "OR EQUAL" SUBMISSIONS/SUBSTITUTIONS

4.6.3.1 Except where a product has been specified as a proprietary material, the words "or equal" are understood to follow the name of any maker, vendor, or product specified to be used in the Contract Documents. To determine if the materials or articles proposed by the Contractor are equal to those specified, the Prime Designer shall determine whether the materials or articles proposed are at least equal in quality, durability, appearance, strength and design to the material or articles named or described, and will perform at least equally the functions imposed by the design. See M.G.L. c.30 §39M.

4.6.3.2 The Contractor shall be responsible for providing the Prime Designer with any information and test results the Prime Designer reasonably requires to determine if a material is equal to a material named or described in the Contract Documents.

4.6.3.3 Whenever the Contractor submits a material for approval as a substitute for a material named or described in the Contract Documents, such submission shall be made at least one hundred and twenty (120) days prior to the date the materials will be used on the Project. In no event shall the Contractor maintain a claim for delays based upon the Prime Designer's review of such substituted materials if the Contractor has failed to comply with the one hundred and twenty (120) days submission requirement.

4.7 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

4.7.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate a portion of the Work.

4.7.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor or its Subcontractors and suppliers to illustrate materials or equipment for some portion of the Work.

4.7.3 Samples are physical examples which illustrate materials, equipment, or workmanship and establish standards by which the Work will be judged.

4.7.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. The purpose of their submission is to demonstrate for those portions of the Work for which submittals are required the way the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Review by the Prime Designer is subject to the limitations of Subparagraph 4.7.9.

4.7.5 The Contractor shall review, approve, and submit to the Prime Designer Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Submittals made by the Contractor which are not required by the Contract Documents may be returned without action. The Contractor's attention is directed to the provisions of Subparagraph 4.6.3 entitled "Or Equal" Submissions/Substitutions and Section 01300 of the Specifications.

4.7.6 The Contractor shall prepare and keep current, for the Prime Designer's approval, a schedule of submittals which is coordinated with the Contractor's construction schedule submitted pursuant to Paragraph 9.4, and allows the Prime Designer reasonable time to review submittals.

4.7.7 The Contractor shall perform no portion of the Work requiring submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Prime Designer. Such Work shall be in accordance with approved submittals.

4.7.8 By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements, and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

4.7.9 The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Prime Designer's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Prime Designer in writing of such deviation at the time of submittal and the Department has given explicit written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals by the Prime Designer's actions.

4.7.10 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples or similar submittals, to revisions other than those requested by the Prime Designer on previous submittals.

4.7.11 Informational submittals upon which the Prime Designer is not expected to take responsive action may be so identified in the Contract Documents.

4.7.12 When professional certification of performance criteria of materials, systems or equipment is required by the Contract Documents, the Prime Designer shall be entitled to rely upon the accuracy and completeness of such calculations and certifications.

4.8 SAMPLES AND TESTS

4.8.1 Materials to be used in the Work may be tested or inspected after reasonable notice by the Prime Designer and may be rejected if they fail the specified tests. Except as otherwise provided in the Contract, all testing of material specifically requested by the Prime Designer will be paid for by the Owner, except that the cost of testing of materials that fail the testing criteria shall be

borne by the Contractor. If the Contractor requests permission to use a material that was not specified in the Contract Documents and the Prime Designer requires testing of such material before approving its use, the Contractor shall pay for such testing.

4.8.2 The source of material proposed by the Contractor shall be designated in time to permit all required testing and inspection before the material is needed for incorporation into the Work. The Contractor shall have no claim for delays due to testing if it fails to designate the proposed source or to order the material in time to provide for adequate testing and inspection. Necessary arrangements shall be made to permit the Prime Designer to make factory, shop, or other inspection of materials or equipment ordered for the Work, in process of manufacture or fabrication, or in storage elsewhere than the site of the Work.

4.8.3 The Contractor shall furnish the Prime Designer with samples of the materials it proposes to use in the execution of the work in sufficient time to afford the Prime Designer the opportunity to adequately review and, if necessary, arrange for testing of such materials.

4.9 DELIVERY AND STORAGE OF MATERIALS

4.9.1 Materials and equipment shall be progressively delivered to the site so that there will be neither delay in the progress of the Work nor an undue accumulation of materials that are not to be used within a reasonable time.

4.9.2 Materials stored off-site shall be stored at the expense of the Contractor in a manner that preserves their quality and fitness for the Work. Material shall be placed on wooden platforms or other hard clean surfaces and not on the ground and shall be properly protected.

4.9.3 If the Contractor requests the Prime Designer's inspection of materials stored off-site, the Contractor shall assume the Prime Designer's reasonable costs for travel, room, and meals associated with such inspection.

4.9.4 Materials stored either at the site or at some other location agreed upon in writing shall be located so as to facilitate prompt inspection and may again be inspected prior to their use in the work.

4.9.5 The Contractor shall take charge of and be liable for any loss of or injury to the materials delivered at or in the vicinity of the place where the Work is being done and shall notify the Prime Designer as soon as any such materials are so delivered and allow them to be examined by the Prime Designer.

4.9.6 Payment for stored materials shall be made in accordance with Paragraph 10.4.

4.10 WARRANTY

The Contractor warrants to the Owner and Prime Designer that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. If required by the Prime Designer, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

4.11 REJECTION OF DEFECTIVE MATERIALS

The Prime Designer may reject materials if the Prime Designer reasonably determines that such materials do not conform to the Contract Documents. No rejected materials, the defects of which have been subsequently corrected, shall be used in the Work except with the written permission of the Prime Designer. No extra time shall be allowed for completion of the Work due to the rejection of non-conforming materials.

4.12 REJECTION OF DEFECTIVE WORK

The Prime Designer's inspection of the Work shall not relieve the Contractor of any of its responsibilities to fulfill the Contract obligations, and defective work shall be corrected. Unsuitable work may be rejected by the Prime Designer, notwithstanding that such work and materials have been previously overlooked or misjudged by the Prime Designer and accepted for payment. If the Work or any part thereof shall be found defective at any time before the final acceptance of the whole Work, the Contractor shall forthwith correct such defect in a manner satisfactory to the Prime Designer, and if any material brought upon the site for use in the Work, or selected for the same, shall be rejected by the Prime Designer as unsuitable or not in conformity with the Contract requirements, the Contractor shall forthwith remove such materials from the vicinity of the Work.

4.13 MATERIALS ATTACHED OR AFFIXED TO THE WORK

Nothing in this Contract shall be construed as vesting in the Contractor any right of property in the materials used after they have been attached or affixed to the Work or the soil; but all such materials shall, upon being so attached or affixed, become the property of the Owner.

4.14 SALES TAX EXEMPTION AND OTHER TAXES

4.14.1 To the extent that materials and supplies are used or incorporated in the performance of this Contract, the Contractor is considered an exempt purchaser under the Massachusetts Sales Act, Chapter 14 of the Acts of 1966.

4.14.2 The Contractor shall be responsible for paying all other taxes and tariffs of any sort, related to the work.

4.15 DOCUMENTS AND SAMPLES AT THE SITE

The Contractor shall maintain at the site for the use and information of the Owner, one record copy of the Drawings, Specifications, Addenda, Change Orders, and other Contract Modifications, in good order and marked currently to record changes and selections made during construction, and in addition approved Shop Drawings, Product Data, Samples, updated construction schedule, and similar required submittals. These shall be available to the Prime Designer and shall be delivered to the Prime Designer for submittal to the Owner upon completion of the Work.

4.16 PERMITS, FEES, AND NOTICES

4.16.1 The Contractor shall secure and pay for any and all permits, licenses, and fees required for the proper execution of the Work. The Contractor shall coordinate all efforts required to obtain these permits

4.16.2 The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on performance of the Work.

4.16.3 It is not the Contractor's responsibility to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations. However, if the Contractor observes that portions of the Contract Documents are at variance therewith, the Contractor shall promptly notify the Prime Designer and Owner in writing, and necessary changes shall be accomplished by appropriate Modification.

4.16.4 If the Contractor performs Work knowing it to be contrary to laws, statutes, ordinances, building codes, and rules and regulations without such notice to the Prime Designer and Owner, the Contractor shall assume full responsibility for such Work and shall bear the attributable costs.

4.17 DEBRIS, CHEMICAL WASTE

4.17.1 The Contractor shall not permit the accumulation of debris, both exterior and interior, and the work area shall at all times be kept satisfactorily clean.

4.17.2 The Contractor shall remove debris from the site of the work and legally dispose of it at any private or public dump that the Contractor may choose. The Contractor shall make all arrangements and obtain any approvals necessary for said disposal from the owners or officials in charge of such dumps and shall bear all cost, including fees resulting from such disposal. Garbage shall be removed daily.

4.17.3 No open fire shall be permitted on site.

4.17.4 Chemical Waste: Chemical waste shall be stored in corrosion resistant containers, removed from the Project site, and disposed of not less frequently than monthly unless directed otherwise. Disposal of chemical waste shall be in accordance with requirements of the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (DEP). Fueling and lubricating of vehicles and equipment shall be conducted in a manner that affords the maximum protection against spills and evaporation. Lubricants to be discarded or burned shall be disposed of in accordance with approved procedures meeting all applicable Federal, State and local regulations. In the event of an oil or hazardous materials spill large enough to violate Federal, State, or applicable local regulations, the Prime Designer shall be notified immediately. The Contractor shall be responsible for immediately cleaning up any oil or hazardous waste spills resulting from its operations. Any costs incurred in cleaning up any such spills shall be borne by the Contractor.

4.18 SITE AND WEATHER PROTECTION

4.18.1 The Contractor shall take precaution during the execution of work involving demolition not to disturb or damage any existing structures, landscaping, walks, roads, or other items scheduled to remain. The Contractor shall restore any damaged items to original condition and as directed by the Prime Designer. The Contractor shall provide and erect acceptable barricades, fences, signs, and other traffic devices to protect the work from traffic and the public as reasonably necessary and as required by the Massachusetts Building Code.

4.18.2 The Contractor shall install weather protection and provide adequate heat in the protected area from November 1 to March 31 as required by M.G.L. c.149 §44G.

4.19 ARCHAEOLOGICAL AND HISTORICAL RESOURCES

All items having any apparent historical or archaeological interest which are discovered in the course of any construction activities shall be carefully preserved and reported immediately to the Prime Designer for determination of appropriate actions to be taken.

4.20 SAFETY REQUIREMENTS

4.20.1 The Contractor must comply with all Federal, State, and Local safety laws and regulations of the applicable to work performed under this Contract.

4.20.2 If the Contractor uses or stores toxic or hazardous substances it is subject to M.G.L. c.111F §2, the "Right to Know" law and regulations promulgated by the Department of Public Health, 105 CMR 670, the Department of Environmental Protection, 310 CMR 33, and the Department of Labor and Workforce Development, 441 CMR 21; and must post a Workplace Notice obtainable from the Department of Labor and Workforce Development.

4.20.3 The Contractor must comply with Dig-Safe Laws. Dig-Safe is the Utility Underground Plant Damage Prevention System, 331 Montvale Ave., Woburn, MA 01801, 1.888.344.7233. The Contractor must notify Dig-Safe of contemplated excavation, demolition, or explosive work in public or private ways, and in any utility company right of way or easement, by certified mail, with a copy to Department of Environmental Protection (DEP). This notice must be given at least 72 hours prior to the work, but not more than sixty days before the work is to be done. Such notice shall state the name of the street or the route number of the way and an accurate description of the location and nature of the proposed work. Dig-Safe is required to respond to the notice within 72 hours of receipt by designating the location of pipes, mains, wires or conduits at the site. The Contractor shall not commence work until Dig-Safe has responded. The work shall be performed in such manner and with reasonable precautions taken to avoid damage to utilities under the surface at the work location. The Contractor shall provide the Superintendent with current Dig-Safe regulations, and a copy of M.G.L. c.82 §40. Any costs related to the services performed by Dig-Safe shall be borne by the Contractor.

4.20.4 This project is subject to compliance with Public Law 92-596 "Occupational Safety and Health Act of 1970" (OSHA), with respect to all rules and regulations pertaining to construction, U.S. Code Title 29, sections 651 et seq. including Volume 36, numbers 75 and 105, of the Federal Register as amended, and as published by the U.S. Department of Labor.

4.20.5 If this Project requires the containment or removal of asbestos or material containing asbestos, lead or waste containing lead based paint, the Contractor shall ensure that the person or company performing the asbestos or lead related services is licensed pursuant to applicable State laws and regulations.

4.21 ACCESS TO WORK

The Contractor shall provide the Owner and Prime Designer access to the Work at all times and shall cooperate with the Owner whenever the Owner invites visitors to the site.

ARTICLE 5 ADMINISTRATION OF THE CONTRACT

5.1 PRIME DESIGNER

The Prime Designer is the person or entity licensed to practice architecture or engineering, which is responsible for performing the duties assigned to the Prime Designer by the Contract Documents.

5.2 COMMUNICATIONS FACILITATING CONTRACT ADMINISTRATION

Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall communicate through the Prime Designer. Communications by and with the Prime Designer's consultants shall be through the Prime Designer. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

5.3 PRIME DESIGNER'S ADMINISTRATION OF THE CONTRACT

5.3.1 The Prime Designer will provide administration of the Contract as described in the Contract Documents, and will be the Owner's representative (1) during construction, (2) until final payment is due and (3) with the Owner's concurrence, from time to time during the guaranty period described in Article 11. The Prime Designer will advise and consult with the Owner.

5.3.2 The Prime Designer will regularly visit the site, conduct job meetings, and keep the Owner informed of the progress and quality of the Work, and will endeavor to guard the Owner against defects and deficiencies in the Work. The Prime Designer's minutes of meetings shall be the official minutes kept on the Project.

5.3.3 Based on the Prime Designer's observations and evaluations of the Contractor's Applications for Payment, the Prime Designer will review and certify the amounts due the Contractor and will submit to the Owner and the Department for their consideration Certificates for Payment in such amounts as the Prime Designer determines appropriate.

5.3.4 The Prime Designer shall reject Work which does not conform to the Contract Documents. Whenever the Prime Designer considers it necessary or advisable to achieve the intent of the Contract Documents, the Prime Designer will have authority to require additional inspection or testing of the Work in accordance with Paragraph 4.8.

5.3.5 The Prime Designer will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking such submittals for conformance with the information given and the design concept expressed in the Contract Documents. This review shall be in accordance with the provisions of Subparagraph 4.6.3 and the procedures described in Section 01300 of the Specifications, and shall not relieve the Contractor from compliance with the requirements of the Contract Documents.

5.3.6 The Prime Designer will prepare Change Orders and Construction Change Directives, and may authorize Minor Changes in the Work as provided in Paragraph 8.1.

5.3.7 The Prime Designer will conduct inspections to determine the date or dates of Substantial Completion and the date of Final Completion, will receive and forward to the Owner for the Owner's review and records written warranties and related documents required by the Contract and assembled by the Contractor, and will issue a final Certificate for Payment upon the Contractor's compliance with the requirements of the Contract Documents.

5.3.8 If the Owner, Prime Designer, and Department agree, the Owner may provide one or more project representatives to assist in carrying out the Prime Designer's responsibilities at the site. The duties, responsibilities, and limitations of authority of such project representatives shall be as described in the General Conditions and explained at the pre-construction conference.

5.3.9 The Prime Designer will interpret and decide matters concerning performance under and requirements of the Contract Documents on written request of either the Owner or Contractor. The Prime Designer's written response to such requests will be made within the thirty day time limit prescribed in Paragraph 8.6.3.

5.3.10 The Prime Designer's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

5.4 PROCEDURES AND PRACTICES

The Department's procedures, forms, and practices which must be employed on the Project will be explained at the pre-construction conference.

5.5 PRECONSTRUCTION CONFERENCE

Prior to commencement of the Work, the Contractor shall meet in conference with representatives of the Owner, Department, and Prime Designer to discuss and develop mutual understandings relative to administration of the quality assurance program, safety program, labor provisions, the schedule of work, and other Contract procedures.

ARTICLE 6 SUBCONTRACTORS

6.1 DEFINITION

6.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the work at the site.

6.1.2 The Contractor shall require each Subcontractor to be bound to the Contractor by the terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities which the Contractor assumes toward the Owner and the Prime Designer.

6.1.3 Subcontracts between the Contractor and a filed sub-bidder shall be in the form required by M.G.L c.149 §44F.

6.2 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner provided that:

- .1** assignment is effective only after termination of the Contract by the Owner for cause pursuant to Paragraph 19.1 and only for those subcontract agreements which the Owner accepts by notifying the Subcontractor in writing; and
- .2** assignment is subject to the prior rights of the surety obligated under bond relating to the Contract.

ARTICLE 7 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

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

7.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such claim as provided elsewhere in the Contract Documents.

7.1.2 The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing and coordinating their construction schedules with one another when directed to do so.

7.2 MUTUAL RESPONSIBILITY

7.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

7.2.2 If part of the Contractor's Work depends on proper execution or results upon construction or operations by the Owner or a separate contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly report to the Prime Designer apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution and results. Failure of the Contractor to so report shall constitute an acknowledgment that the Owner's or separate contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

7.2.3 The Contractor shall promptly remedy damage wrongfully caused by the Contractor to completed or partially completed construction or to property of the Owner or separate contractors

ARTICLE 8 CHANGES IN THE WORK

8.1 CHANGES - DEFINITIONS

8.1.1 All changes in the work, including any increase, decrease, or other equitable adjustment in the Contract Sum or in the time for performing the Contract, shall be authorized in the form of one, or a combination of, the following written instruments: Change Order, Construction Change Directive, or a Minor Change in the Work. The term "equitable adjustment" as used in this paragraph shall include all adjustments to the Contract Sum or time to which the Contractor is entitled pursuant to M.G.L. c.30 §§39N and 39O and such equitable adjustment shall be made in accordance with the provisions of this Article.

8.1.2 A Minor Change is a written order binding on the Owner and Contractor issued by the Prime Designer, with the concurrence of the Construction Advisor, not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. The Contractor shall carry out such written orders promptly.

8.1.3 A Change Order is a written instrument prepared by the Prime Designer and signed by the Owner, Department, Contractor, and Prime Designer, stating their agreement regarding a change in the work, including a change in the Contract Sum or Contract Time.

8.1.4 A Construction Change Directive is a written order prepared by the Prime Designer and signed by the Owner, Prime Designer, and Department, directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum, or Contract Time, or both. The Owner may, by Construction Change Directive, and without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

8.1.5 A Change Order shall be based upon agreement among the Owner, Contractor, Prime Designer, and Department; a Construction Change Directive requires agreement by the Owner, Prime Designer, and the Department, and may or may not be agreed to by the Contractor; an order for a Minor Change in the Work may be issued by the Prime Designer with the concurrence of the Construction Advisor.

8.1.6 Change Orders and Construction Change Directives must be counter-signed by the Administrator in accordance with Subparagraph 3.3.1, to be effective.

8.2 REQUEST FOR A CHANGE IN THE WORK

A change order request shall be in writing and may originate with the Owner, the Department, the Prime Designer, or the Contractor. If such a request would cause a change in the Contract Sum, the Contractor shall promptly submit to the Prime Designer its cost and pricing data for such proposed change. Such data shall be accurate, current and complete at the time of submission and shall be computed in accordance with Subparagraph 8.3.1.

8.3 METHOD FOR DETERMINING AMOUNT OF CHANGE

8.3.1 Changes in the Contract Sum shall be calculated in accordance with one or a combination of the following methods, as determined by the Prime Designer:

- .1** Lump sum basis, provided the lump sum amount shall include the estimated cost of the change, broken down by Items **a** through **i** in the following Subparagraph **.3**.
- .2** Unit price basis, to be adjusted in accordance with contract unit prices, or other agreed upon unit prices provided that the unit prices shall be inclusive of all costs related to such equitable adjustment.
- .3** Time and materials basis, on a not-to-exceed predetermined upset amount determined by the Prime Designer, to be subsequently adjusted on the basis of the Contractor's actual costs based on the following items **a** through **i**:
 - a.** Cost of labor at the rates found elsewhere in this document, including foremen;
 - b.** Costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;
 - c.** Rental cost of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others.
 - d.** A percent of the net increase or decrease of Item **a** to cover Worker's Compensation, F.I.C.A., and unemployment contributions.
 - e.** The percentage for Worker's Compensation in Item **d** above shall not exceed the standard manual rate for the involved trade, as set by the Worker's Compensation Rating and Inspection Bureau of Massachusetts. This rate shall not include any surcharges such as experience modifications and all risk factor adjustment programs, etc.
 - f.** For work performed by the Contractor's own forces, there shall be added an amount of 15% of items **a - d** for overhead, superintendence, and profit.
 - g.** For work performed by any Subcontractor, there shall be added an amount of 15% of the Subcontractor's costs for Items **a - d** for the Subcontractor's overhead, superintendence and profit. The Contractor shall be entitled to an additional 10% mark-up on the total amount of the Subcontractor's price as compensation for assuming full responsibility and supervision for the Subcontractor's work.
 - h.** Actual increases in the premium costs for performance and payment bonds required of the Contractor and filed Subcontractors, provided there will be an appropriate credit for reduced premiums for a credit change order.
 - i.** On any change in the Contract Sum that involves a credit, the amount of the credit will not include an overhead and profit factor, however, the credit will include an amount for item **d**, which shall not be less than 25% of item **a**.

8.3.2 The method provided in Subparagraph 8.3.1, for compensating the Contractor and Subcontractors for changes in the Work, shall be considered to adequately compensate the Contractor and Subcontractors for any and all costs directly, indirectly, or consequentially related to, or caused by, such change in the work.

8.4 WORK PERFORMED UNDER PROTEST

The Contractor shall perform all work as directed by the Prime Designer, and if the Prime Designer determines that certain work for which the Contractor has requested a change order does not represent a change in the Contract, or if the Contractor and the Prime Designer cannot agree to the amount of compensation for a change order, the Contractor shall perform said work under protest and must follow the notice requirements and maintain the records required by Subparagraph 8.7.3.

8.5 STATUTORY CHANGE ORDER PROVISIONS

The Contractor's attention is directed to the Massachusetts General Laws Chapter 30, §§ 39I, 39J, 39N, 39O and 39P, the provisions of which apply to this Contract.

8.6 DIFFERING SITE CONDITIONS, M.G.L. c.30 §39N

8.6.1 If, during the progress of the Work, the Contractor or the Owner discovers that the actual subsurface or latent physical conditions encountered at the site differ substantially or materially from those shown on the plans or indicated in the Contract Documents, either the Contractor or the Owner may request an appropriate time extension and an equitable adjustment in the Contract Sum applying to work affected by the differing site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party making such claim to the other party as soon as possible after such conditions are discovered.

8.6.2 Upon receipt of such a claim from a Contractor, or upon its own initiative, the Owner shall make an investigation of such physical conditions, and, if they differ substantially or materially from those shown on the plans or indicated in the Contract Documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the plans and Contract Documents and are of such nature as to cause an increase or decrease in the cost of performance of the work or a change in the construction methods required for the performance of the work which results in an increase or decrease in the cost of the work, the Owner shall upon submission by the Contractor of a properly submitted Change Order request, make an equitable adjustment in the Contract Sum and the Contract shall be modified in writing accordingly.

8.6.3 TIMELY DECISION BY OWNER. M.G.L. c.30 §39P

Whenever this Contract requires the Owner or its Prime Designer to make a decision during construction of the Project, on interpretation of the specifications, approval of equipment, material or any other approval, or progress of the work, that decision shall be made promptly and, in any event, no later than thirty days after receipt of a written submission for such decision by the Contractor; but if such decision requires extended investigation and study, the Owner or the Prime Designer shall, within thirty days after the receipt of the submission, give the Contractor written notice of the reasons why the decision cannot be made within the thirty day period and the date by which the decision will be made.

8.7 CLAIMS

8.7.1 If the Contractor has any claim or dispute of any nature arising under this Contract, including a claim based on the Owner's failure or refusal to approve a change order request of the Contractor, in full or in part, the Contractor shall submit such claim or dispute to the Prime Designer, in the form of a change order request, for initial review and consideration, subject to further appeal to the Administrator. If the Contractor is not satisfied with the Prime Designer's decision or, if the Prime Designer fails to render a decision within thirty days after receiving written notice of such claim or dispute from the Contractor, the Contractor may file a written request for a decision with the Department pursuant to Subparagraph 8.7.2.

8.7.2 Appeal of an Prime Designer's decision under Subparagraph 8.7.1 must be made directly to the Administrator by certified mail, copy to the Prime Designer and Owner, within twenty-one (21) calendar days after the date on which the party making the appeal receives the Prime Designer's written decision or within twenty-one (21) days after the thirty (30) day non-decision period noted in 8.7.1. Failure to appeal within this period will result in the Prime Designer's decision becoming final and binding upon the Owner and the Contractor.

8.7.3 Pending resolution of the claim or dispute, the Contractor must proceed with the disputed Work, as directed by the Prime Designer. The Contractor must give written notice to the Department and the Prime Designer stating that it is proceeding with the disputed work under protest. Accurate records of the nature and extent of the disputed Work and of the time spent and equipment used on the disputed Work shall be maintained by the superintendent and verified daily by the Project Representative, or the Owner's designee. Failure of the Contractor to maintain such records shall cause the Contractor to forfeit its claim to additional compensation for such disputed work.

8.7.4 Meetings or administrative conferences held by the Department to review the basis of the claim or dispute are non-binding. Such conferences are not subject to the State Administrative Procedures Act.

8.7.5 At the conclusion of these proceedings, the Department shall issue a decision which shall be final under the Contract. The matter may then be appealed to a court of competent jurisdiction.

8.7.6 Requests for administrative conferences by subcontractors must be made by the Contractor; subcontractors cannot make such requests directly.

ARTICLE 9 TIME, SCHEDULES, AND COMPLETION

9.1 DEFINITIONS

9.1.1 Unless otherwise provided, Contract Time is the period of time, as extended by approved Change Order, allotted in the Contract Documents for Substantial Completion of the Work.

9.1.2 The date of commencement of the Work is the date established in the Notice to Proceed from the Owner. The commencement date shall not be postponed by the failure to act by the Contractor or by persons or entities for which the Contractor is responsible.

9.1.3 The date of Substantial Completion is the date certified by the Prime Designer in accordance with Subparagraph 9.6.7.

9.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

9.2. PROGRESS AND COMPLETION

9.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Contract the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

9.2.2 The Contractor shall proceed expeditiously with adequate forces and shall achieve Completion within the Contract Time.

9.3 DELAYS AND EXTENSIONS OF TIME

9.3.1 The Contractor shall be entitled to an extension of time for completion of the Work because of;

- .1 acts of God;
- .2 labor disputes;
- .3 abnormal weather conditions; or
- .4 acts of neglect of the Owner, Prime Designer, or Department as described in Subparagraph 8.6.3.

9.3.1.5 Except in unusual circumstances, delays caused by suppliers, Subcontractors and sub-subcontractors shall be considered to be within the control of the Contractor.

9.3.1.6 Should the Contractor require additional time to complete the Work, the Contractor shall document the reasons therefore and request an extension of time at the time the alleged delay occurs, as provided in this Article and Article 8.

9.3.1.7 Failure to notify the Prime Designer of any delay as provided in this Article shall preclude the Contractor from subsequently claiming any damages due to said delay.

9.3.1.8 Requests for extensions of time shall be submitted as a change order request to the Prime Designer under Article 8 for the Owner's consideration.

9.3.2 CONTRACTOR'S LIABILITY FOR DELAYS

The Contractor shall be liable for, and shall pay, to the Owner, all of the Owner's Project related costs incurred after the time stipulated for Substantial Completion, as extended by Change Order. Such costs shall include: fees paid to the Prime Designer as extra services for inspection services and administration of the Contract, at the rate stipulated in the Contract for Architectural Services between the Owner and the Prime Designer; the costs of the Project Representative at the current salary rate; lost rental income based on the average rent collected by the Owner, and/or increased rental subsidies and any other direct expenses. The Owner may retain from moneys otherwise due the Contractor whatever sums accrue to the Owner pursuant to this provision. The Contractor shall not be liable for costs for delay in performance for any period for which an extension of the Contract Time has been granted pursuant to the provisions of Subparagraph 9.3.

9.3.3 OWNER DELAYS

9.3.3.1 The Owner may delay the commencement of the Work, or any part thereof, due to unforeseen circumstances or conditions which have a bearing on the Work required under this Contract or for any other reason if it is deemed to be in the best interest of the Owner to do so. Except as expressly provided in the following Subparagraphs 9.3.3.2, 9.3.3.3, and 9.3.3.4, the Contractor shall have no claim for additional compensation on account of such delay, but shall be entitled to an extension of Contract Time as determined reasonable by the Prime Designer.

9.3.3.2 The Contractor and the Owner agree that the following Subparagraphs provide the Contractor with the right to request additional compensation for Owner caused delays only in the following two circumstances:

- .1 When the Owner provides the Contractor with a written order to suspend or delay the Work, or a portion thereof, for a period of fifteen days or more.

- .2 When the Owner or its Prime Designer fails to make a decision within the thirty day period described in Subparagraph 8.6.3 and such failure delays the Work, or a portion thereof, for fifteen days or more.

9.3.3.3 The Owner may, for its convenience, order the Contractor in writing to suspend, delay, or interrupt all or any part of the Work for such period of time as it may determine appropriate, provided however, that if there is a suspension, delay, or interruption for fifteen days or more, or there is a failure of the Owner to act within the time specified in this Contract, the Owner shall make an adjustment in the Contract Sum for any increase in the cost of performance of this Contract, but shall not include any profit to the Contractor on account of such increase; and provided further, that the Owner shall not make any adjustment in the Contract Sum under this provision for any suspension, delay, interruption, or failure to act to the extent that such is due to any cause for which this Contract provides for an equitable adjustment of the Contract Sum under any other Contract provisions. M.G.L. c.30 §39O (a).

9.3.3.4 The Contractor must submit the amount of a claim under Subparagraph 9.3.3.3 to the Owner in writing as soon as practicable after the end of the suspension, delay, interruption, or failure to act and, in any event, not later than the date of final payment under this Contract and except for costs due to a suspension order, the Owner shall not approve any costs in the claim incurred more than twenty days before the Contractor notified the Owner in writing of the act or failure to act involved in the claim. M.G.L. c.30 §39O (b).

9.3.3.5 The Owner and the Contractor agree that the preceding Subparagraph 9.3.3.4 places a burden on the Contractor to inform the Owner, whenever the Contractor considers that an action or inaction of the Owner or its Prime Designer could result or has resulted in a delay in the Project, thereby providing the Owner with the opportunity to take action to avoid or lessen the time extensions or damages that might be associated with such action or inaction.

9.3.3.6 The Contractor must file any claim for additional compensation made pursuant to Subparagraph 9.3.3.4 as a Change Order request. The amount of any such claim shall be calculated only in accordance with the provisions of Subparagraph 8.3.1.3 items a through i, and shall be subject to the provisions of Subparagraph 8.3.2.

9.4 CONSTRUCTION AND PAYMENT SCHEDULES

9.4.1 Prior to commencement of the Work the Contractor shall submit to the Prime Designer a construction schedule in bar graph form, satisfactory to the Prime Designer, showing in detail the proposed progress for the construction of the various parts of the Work, the proposed times for receiving materials required, and the interrelationship between the various construction operations and the percentage of completion and the dollar value of the completed work on the first day of each month for each section of the specifications and the entire Work. Submission of said schedule shall be a condition precedent to approval of the Contractor's first application for payment.

9.4.2 At the end of each month, or more often if required, the Contractor shall furnish the Prime Designer an updated schedule showing actual progress of the various parts of the Work in comparison with the originally proposed progress and payment schedules. If the Prime Designer raises any objections to progress or payment schedules submitted by the Contractor, the Contractor shall immediately address and resolve such objections to the reasonable satisfaction of the Prime Designer.

9.4.3 If the Contractor submits a construction schedule that anticipates Substantial Completion before the date established in the Owner's Notice to Proceed, the Contractor shall have no claim for additional compensation on account of any delays that prevent Substantial Completion before the date set in said Owner's Notice to Proceed.

9.5 USE AND OCCUPANCY

9.5.1 Prior to the date of Substantial Completion of the entire Project stipulated in the Notice to Proceed, the Owner shall have the right, from time to time, to occupy and use any portion of the Project as the Work in connection therewith is substantially completed, provided such use and occupancy does not unduly interfere with the Contractor's operations.

9.5.2 The Prime Designer will, prior to any such use and occupancy, give written notice to the Contractor, indicating the areas intended to be occupied and used, and the intended commencement date of such use and occupancy. Occupancy and use shall not commence prior to a time mutually agreed to by the Owner and the Contractor.

9.5.3 Upon receipt of such notice of intent, the Contractor shall promptly secure and submit to the Prime Designer endorsement from the insurance carrier permitting use and occupancy of the Work, or any designated portion thereof, by the Owner prior to Substantial Completion of the entire Project. The Contractor shall be permitted to cancel its special perils insurance for that portion of the Project used and/or occupied by the Owner.

9.5.4 Partial or entire use and occupancy by the Owner shall not constitute an acceptance of Work not completed in accordance with the Contract Documents nor relieve the Contractor from the obligation of performing any Work required by the Contract but not completed at the time of use and occupancy. Before such use and occupancy, the Prime Designer will give the Contractor a list of items to be completed prior to Final Completion occurring in the areas to be occupied.

9.5.5 The Contractor shall be relieved of all maintenance costs of the portion of the Project occupied under the provisions of this Article.

9.5.6 The Contractor shall not be responsible for wear and tear or damage resulting solely from such use and occupancy.

9.5.7 The Contract Sum will be adjusted by mutually acceptable arrangements between the Owner and the Contractor with respect to heat, electricity, and water furnished by the Contractor to the portion of the Work so occupied.

9.5.8 When any portion of the building is in condition to receive fittings, appliances, furniture, or other property to be furnished and installed by the Owner under separate contracts, the Contractor shall allow the Owner to bring such items into the building and shall provide all reasonable facilities and protection therefore.

9.6 SUBSTANTIAL COMPLETION

9.6.1 Substantial Completion is the stage in the progress of the Work when, in the opinion of the Prime Designer, the Work is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use.

9.6.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Prime Designer a comprehensive list of items to be completed or corrected. The Contractor shall proceed promptly to complete and correct items on the list. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

9.6.3 Upon receipt of the Contractor's list of items to be completed or corrected, the Prime Designer will promptly make a thorough inspection and prepare a "punch list", setting forth in accurate detail any items on the Contractor's list and additional items that are not acceptable or are incomplete.

9.6.4 If, after receipt of the Contractor's list, the Prime Designer determines that the Work is not substantially complete, the Prime Designer shall inform the Contractor of those items that must be completed before the Prime Designer will prepare a punch list. Upon completion of those items, the Contractor shall again request the Prime Designer to prepare the punch list.

9.6.5 When the punch list has been prepared, the Contractor will arrange a meeting with the Prime Designer and Subcontractors to identify and explain all punch list items and address questions on the work which must be done before final acceptance.

9.6.6 The Prime Designer may revise the punch list, from time to time, to ensure that all items of the Work are properly completed.

9.6.7 The Prime Designer will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate within the provisions of Subparagraph 9.7.2.

9.6.8 Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate and shall be subject to the approval of the Department.

9.7 FINAL COMPLETION

9.7.1 After the Prime Designer has certified that the Work is substantially complete, the Contractor shall immediately proceed to complete all the remaining items of Work as determined by the Prime Designer, including items authorized by Change Orders, Construction Change Directives, or items disputed by the Contractor.

9.7.2 The Contractor shall complete all the remaining items of Work described in Subparagraph 9.7.1, as soon as possible, and in any event within one hundred and twenty days after Substantial Completion, unless the Prime Designer determines that a shorter time period for completion is appropriate, in which event the Contractor must complete the Contract work within such period. The Prime Designer may extend such one hundred and twenty day period if the Prime Designer determines that such extension is justified.

9.7.3 If the Contractor fails to complete the remaining items of Work within the time period provided in Subparagraph 9.7.2, the Owner may arrange for other contractors to complete such items and the direct and indirect costs of such completion shall be charged against the balance due the Contractor or, if no such balance remains, the Contractor shall pay the Owner the costs of such completion.

9.7.4 As an alternative to the procedure described in Subparagraph 9.7.3, the Owner may invoke the performance bond of the Contractor and demand that the surety shall complete the remaining items of work in a timely manner.

9.7.5 The Prime Designer will conduct up to three (3) inspections of completed punchlist items. The Contractor shall be responsible for the costs of additional inspections required to verify successful completion of the punchlist.

ARTICLE 10 PAYMENTS

10.1 CONTRACT SUM

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

10.2 SCHEDULE OF VALUES

10.2.1 Before the first Application for Payment, the Contractor shall submit to the Prime Designer a schedule of values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Prime Designer may require. This schedule, unless objected to by the Prime Designer, shall be used as a basis for reviewing the Contractor's Applications for Payment.

10.2.2 The schedule of values shall contain a separate item for each Section of the Specifications broken down in such form as the Prime Designer may require. Each item in the schedule of values shall include its proper share of overhead and profit.

10.3 APPLICATIONS FOR PAYMENT

Once each month, on a date established at the beginning of the Work, the Contractor shall deliver to the Prime Designer by hand or by registered or certified mail with return receipt, an itemized Application for Payment, supported by such data substantiating the Contractor's right to payment as the Prime Designer may require, and reflecting retainage as provided in Subparagraph 10.6.1. Such Application for Payment shall be submitted on a form available from the Department. The form shall show separately:

- .1 The value of labor and materials incorporated in the Work.
- .2 The value, kind, and quantity of each item of material or equipment not incorporated in the Work but delivered and suitably stored at the site, during the current pay period.
- .3 The value, kind, and quantity of each item of material or equipment not incorporated in the Work but suitably stored at some other location agreed upon in writing, during the current pay period.
- .4 All Change Orders approved up to the date of the Application for Payment.
- .5 The amounts approved for payment for each item on previous applications.

10.4 PAYMENT FOR STORED MATERIALS

10.4.1 The Contractor shall include in such Application for Payment only such materials as are incorporated in the Work. Except however, the Contractor may include the value of materials or equipment delivered at the site of the Work (or at some location agreed to in writing) upon delivery to the Owner of:

- .1 an acceptable Transfer of Title; and
- .2 receipted invoices or other acceptable proof of prior payment by the Contractor for such materials; and
- .3 a stored materials insurance binder (see subparagraph 16.5.2) that covers the materials for which payment is requested, that names the Owner and the Department as an insured party should the stored materials be subjected to any casualty, loss, or theft prior to their inclusion in the Work.

10.4.2 This material(s) or equipment must, in the judgment of the Prime Designer:

- .1 meet the requirements of the Contract, including prior shop drawing, product data, and sample approval; and
- .2 be ready for use; and
- .3 be properly stored by the Contractor and adequately protected until incorporated into the Work.

10.4.3 Failure to comply with subparagraphs 10.4.1 and 10.4.2 may result in Certificates being changed in accordance with M.G.L. c.30 §39K.

10.5 CERTIFICATES FOR PAYMENT

10.5.1 The Prime Designer shall mark the date of receipt on the Contractor's Application for Payment. The Prime Designer will, within seven days after receipt of the Contractor's Application for Payment either,

- .1 issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Prime Designer determines is properly due, or
- .2 return the application to the Contractor if it is not in proper form or contains computations not arithmetically correct; or
- .3 make changes to the application as provided in subparagraph 10.5.2.

10.5.2 The Prime Designer shall notify the Contractor and Owner in writing of the Prime Designer's reasons for withholding certification in whole or in part as provided in subparagraphs 10.6.1.2 and 10.6.1.3.

10.5.3 The Owner may make changes in any Application for Payment submitted by the Contractor in accordance with M.G.L. c.30 §39K, and the payment due on said Application for Payment shall be computed in accordance with the changes so made. The provisions of said Section 39K shall govern payments pursuant to Applications for Payment on which the Owner has made changes.

10.5.4 No certificate for payment nor any progress payment shall constitute acceptance of Work not in accordance with the Contract Documents.

10.6 STATUTORY PAYMENT PROVISIONS

10.6.1 After the Prime Designer has issued a Certificate for Payment the Owner shall make payment to the Contractor in accordance with M.G.L. c.30 §39K which provides as follows:

- .1** Within 30 days after receipt from the Contractor, at the place designated by the Owner if such a place is so designated, of a periodic estimate requesting payment of the amount due for the preceding month, the Owner will make a periodic payment to the Contractor for the Work performed during the preceding month and for the materials not incorporated in the Work but delivered and suitably stored at the site (or at some location agreed upon in writing) to which the Contractor has title or to which a Subcontractor has title and has authorized the Contractor to transfer title to the Owner, less (1) a retention based on its estimate of the fair value of its claims against the Contractor and less (2) a retention for direct payments to Subcontractors based on demands for same in accordance with the provisions of Section 39F, and less (3) a retention not exceeding five percent (5%) of the approved amount of the periodic payment.
- .2** After the receipt of a periodic estimate requesting final payment and within 65 days after (a) the Contractor fully completes the Work or substantially completes the work so that the value of the Work remaining to be done is, in the estimate of the Owner, less than one percent (1%) of the original Contract Sum, or (b) the Contractor substantially completes the Work and the Owner takes possession for occupancy, whichever occurs first, the Owner shall pay the Contractor the entire balance due on the Contract less, (1) a retention based on its estimate of the fair value of its claims against the Contractor and of the cost of completing the incomplete and unsatisfactory items of Work less (2) a retention for direct payments to Subcontractors based on demands for same in accordance with the provisions of Section 39F, or based on the record of payments by the Contractor to the Subcontractors under this Contract if such record of payment indicates that the Contractor has not paid Subcontractors as provided in Section 39F.
- .3** If the Owner fails to make payment as herein provided, there shall be added to each such payment daily interest at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston commencing on the first day after said payment is due and continuing until the payment is delivered or mailed to the Contractor; provided, that no interest shall be due, in any event, on the amount due on a periodic estimate for final payment until forty-five days after receipt of such a periodic estimate from the Contractor, at the place designated by the Owner if such a place is so designated. The Contractor agrees to pay to each Subcontractor a portion of any such interest paid in accordance with the amount due each Subcontractor.

10.6.2 DIRECT PAYMENT TO SUBCONTRACTORS

10.6.2.1 The Contractor shall make payments to filed Subcontractors in accordance with M.G.L. c.30 §39F which provides as follows:

- .1** Forthwith after the Contractor receives payment on account of a periodic estimate, the Contractor shall pay to each Subcontractor the amount paid for the labor performed and the materials furnished by the Subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the Subcontractor by the Contractor.
- .2** Not later than the 65th day after each Subcontractor substantially completes the Work in accordance with the plans and specifications, the entire balance due under the subcontract less amounts retained by the Owner as the estimated cost of completing the incomplete and unsatisfactory items of Work, shall be due the Subcontractor and the Owner shall pay that amount to the Contractor. The Contractor shall forthwith pay to the Subcontractor the full amount received from the Owner less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the Subcontractor by the Contractor.
- .3** Each payment made by the Owner to the Contractor pursuant to Subparagraphs .1 and .2 of this paragraph for the labor performed and the materials furnished by a Subcontractor shall be made to the Contractor for the account of that Subcontractor and the Owner shall take reasonable steps to compel the Contractor to make each such payment to each such Subcontractor. If the Owner has received a demand for direct payment from a Subcontractor for any amount which has already been included in a payment to the Contractor or which is to be included in a payment to the Contractor for payment to the Subcontractor as provided in Subparagraphs .1 and .2, the Owner shall act upon the demand as provided in this section.
- .4** If, within 70 days after the Subcontractor has substantially completed the Subcontract Work, the Subcontractor has not received from the Contractor the balance due under the Subcontract including any amount due for extra labor and materials furnished to the Contractor, less any amount retained by the Owner as the estimated cost of completing the incomplete and unsatisfactory items of Work, the Subcontractor may demand direct payment of that balance from the Owner. The demand shall be by a sworn statement delivered to or sent by certified mail to the Owner, and a copy shall

be valid even if delivered or mailed prior to the seventieth day after the Subcontractor has substantially completed the Subcontract Work. Within ten days after the Subcontractor has delivered or so mailed a copy to the Contractor, the Contractor may reply to the demand. The reply shall be by a sworn statement delivered to or sent by certified mail to the Owner, and a copy shall be delivered to or sent by certified mail to the Subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the Subcontract including any amount due for extra labor and materials furnished to the Contractor and of the amount due for each claim made by the Contractor and of the amount due for each claim made by the Contractor against the Subcontractor.

- .5 Within 15 days after receipt of the demand by the Owner but in no event prior to the 70th day after substantial completion of the Subcontract Work, the Owner shall make direct payment to the Subcontractor of the balance due under the Subcontract including any amount due for extra labor and materials furnished to the Contractor, less any amount (i) retained by the Owner as the estimated cost of completing the incomplete or unsatisfactory items of Work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the Contractor in the sworn reply; provided, that the Owner shall not deduct from a direct payment any amount as provided in part (iii) if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown required by Subparagraph .4. The Owner shall make further direct payments to the Subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in part (i) and (ii) of this Subparagraph.
- .6 The Owner shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of Subparagraph .5 in an interest-bearing joint account in the names of the Contractor and the Subcontractor in a bank in Massachusetts selected by the Owner or agreed upon by the Contractor and the Subcontractor and shall notify the Contractor and the Subcontractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the amount in the account, including accrued interest, as provided in an agreement between the Contractor and the Subcontractor or as determined by decree of a court of competent jurisdiction.
- .7 All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account or accounts in a bank pursuant to Subparagraph .6 shall be made out of amounts payable to the General Contractor at the time of receipt of a demand for direct payment from a Subcontractor or out of amounts which later become payable to the Contractor and in order of receipt of such demands from Subcontractors. All direct payments shall discharge the obligation of the Owner to the Contractor to the extent of such payment.
- .8 The Owner shall deduct from payments to the Contractor amounts which, together with the deposits in interest-bearing accounts pursuant to Subparagraph .6, are sufficient to satisfy all unpaid balances of demands for direct payment received from Subcontractors. All such amounts shall be earmarked for such direct payments, and the Subcontractors shall have a right to such deductions prior to any claims against such amounts by creditors of the Contractor.
- .9 If the Subcontractor does not receive payment as provided in Subparagraph .1 or if the Contractor does not submit a periodic estimate for the value of the labor and materials performed or furnished by the Subcontractor and the Subcontractor does not receive payment for same when due less the deductions provided for in Subparagraph .1, the Subcontractor may demand direct payment by following the procedure in Subparagraph .4 and the Contractor may file a sworn reply as provided in that same Subparagraph. A demand made after the first day of the month following that for which the Subcontractor performed or furnished the labor and materials for which the Subcontractor seeks payment shall be valid even if delivered or mailed prior to the time payment was due on a periodic estimate from the Contractor. Thereafter the Owner shall proceed as provided in Subparagraphs .5, .6, .7, and .8.

10.7 FINAL PAYMENT

10.7.1 Upon completion of the Work, the Contractor shall be entitled to payment of the Contract balance, in accordance with Subparagraph 10.6.1.2 and per the process described in Division 1 of the Specifications.

10.7.2 The acceptance by the Contractor of the last payment due under this Contract or the execution of the Final Certificate of Completion, shall operate as a release to the Owner, Department, and the Prime Designer from all claims and liability related to this Contract.

10.8 PAYMENT LIABILITIES OF CONTRACTOR

10.8.1 The Contractor shall be responsible to the Owner for all expenses, losses, and damages incurred in consequence of any defect, omission, or mistake of the Contractor or any of its employees, Subcontractors, or suppliers.

10.8.2 The Owner may retain any moneys which would otherwise be payable under this Contract and apply the same, or so much as may be necessary therefore, to the payment of any expenses, losses, or damages incurred by the Owner as a direct result of the Contractor's failure to perform its obligations hereunder.

ARTICLE 11 GUARANTEES AND WARRANTIES

11.1 GENERAL GUARANTY

If at any time during the period of one (1) year from the date of Substantial Completion as defined in Paragraph 9.6, any part of the Work shall, in the reasonable determination of the Prime Designer or Owner, require replacing or repairing due to the fact that it is broken, defective, or otherwise does not conform to the Contract Documents, the Owner will notify the Contractor to make the required repairs or replacement.

11.2 If the Contractor shall neglect to commence such repairs or replacement to the satisfaction of the Owner within ten (10) days from the date of giving or mailing such notice, then the Owner may employ other persons to make the same.

11.3 The Contractor agrees, upon demand, to pay to the Owner all amounts which the Owner expends for such repairs or replacements.

11.4 During this one year guarantee period any corrective work shall be performed in accordance with the applicable terms of this Contract. For items of work completed after use and occupancy has been taken, the one year guarantee shall commence at the time the Owner accepts such items.

11.5 This one year guarantee shall not limit any express guaranty or warranty provided elsewhere in the Contract.

11.2 SPECIAL GUARANTEES AND WARRANTIES

11.2.1 Guarantees and warranties required in the various sections of the Specifications must be delivered to the Prime Designer before final payment to the Contractor may be made, or in the case of guarantees and warranties which originate with a Subcontractor's section of the Work, before final payment for the amount of that subtrade or for the phase of Work to which the guarantee or warranty relates.

11.2.2 The failure to deliver a required guarantee or warranty shall constitute a failure to fully complete the Work in accordance with the Contract Documents.

11.2.3 The Contractor's obligation to correct Work as set forth in Paragraph 4.12 is in addition to, and not in substitution of, such guarantees or warranties as may be required in the various Sections of the Specifications.

ARTICLE 12 MISCELLANEOUS LEGAL REQUIREMENTS

12.1 GENERAL

The Contractor shall stay fully informed of all existing and future state and national laws and municipal ordinances and regulations in any manner affecting those engaged or employed in the work, or the materials used or employed in the work, or in any way affecting the conduct of the Work, and of all such orders and decrees of bodies or tribunals having any jurisdiction or authority over the Contract Work. All provisions of law that apply to this Contract are hereby made a part of this Contract. If any discrepancy or inconsistency is discovered in the Contract Documents in relation to any such law, ordinance, regulation, order or decree, the Contractor shall forthwith report the same to the Owner in writing.

12.1.1 The Contractor shall cause all of its agents and employees to observe and comply with all such existing and future laws, ordinances, regulations, orders and decrees.

12.2 CORPORATE DISCLOSURES

The Contractor, if a foreign corporation, shall comply with M.G.L. c.181 §3 and §5, and M.G.L. c.30 §39L.

12.3 VETERANS PREFERENCE

In the employment of mechanics and apprentices, teamsters, chauffeurs, and laborers in the construction of public works in the Commonwealth, preference shall first be given to citizens of the Commonwealth who have been residents of the Commonwealth for at least six months at the commencement of their employment and who are veterans as defined M.G.L. c.4 §7 (34), and who are qualified to perform the work to which the employment relates; and secondly, to citizens of the Commonwealth generally who have been residents of the Commonwealth for at least six months at the commencement of their employment, and if they cannot be obtained in sufficient numbers, then to citizens of the United States.

12.4 PREVAILING WAGE RATES

The Director of the Department of Labor and Workforce Development has established the Schedule found in Division One of the Specifications, listing the prevailing minimum wage rates that must be paid to all workers employed on the Contract. Such Schedule shall continue to be the minimum rate of wages payable to workers on this Contract throughout the term of the Contract. The Contractor shall not have any claim for extra compensation from the Owner if the actual wages paid to employees on the Contract exceeds the rates listed on the Schedule. The Contractor shall cause a copy of said Schedule to be kept in a conspicuous place at the Project site during the term of the Contract. (See M.G.L c.149 §26-27H.) If reserve police officers are employed by the Contractor, they shall be paid the prevailing wage of regular police officers. (See M.G.L c.149 §34B).

12.5 VEHICLE AND EQUIPMENT OPERATORS

If the Director of the Department of Labor and Workforce Development has established a Schedule of wage rates to be paid to the operators of trucks, vehicles or equipment for this Project, the Contractor shall be obligated to pay such operators at least the minimum wage rate contained on such Schedule. (See M.G.L. c.149 §26-27H).

12.6 EIGHT HOUR DAY AND LODGING

12.6.1 No laborer, workman, mechanic, foreman or inspector working in the employment of the Contractor, Subcontractor or other person doing or contracting to do the whole or part of the Work, shall be required or permitted to work any more than eight hours in any one day, or more than 48 hours in any one week, or more than six days in any one week, except in cases of emergency.

12.6.2 Every employee on the Work shall lodge, board, and trade where and with whom he/she elects, and the Contractor and any Subcontractor shall not directly or indirectly require, as a condition of employment, that an employee lodge, board, or trade at a particular place or with a particular person.

12.7 EXECUTIVE ORDERS

The Contractor shall comply with the provisions of G.L. c.151B; Executive Order 478, Order regarding non- discrimination, diversity, equal Opportunity, and Affirmative Action; Executive Order No. 227, Governor's Code of Fair Practices, Executive Order No. 390 pertaining to minority and women owned business development; Executive Order No. 246 pertaining to the handicapped; Executive Order 481, prohibiting the use of undocumented workers on state contracts and all regulations promulgated pursuant thereto. The aforementioned law, executive orders, and regulations are incorporated herein by reference and made a part of this Contract."

ARTICLE 13 CONTRACTOR'S ACCOUNTING REQUIREMENTS

13.1 DEFINITIONS

13.1.1 "Contractor" means any person, corporation, partnership, joint venture, sole proprietorship, or other entity awarded this Contract.

13.1.2 "Contract" means any contract awarded or executed pursuant to M.G.L. c.30 §39M or M.G.L. c.149 §44A-J, which is for an amount greater than one hundred thousand dollars (\$100,000).

13.1.3 "Records" means books of original entry, accounts, checks, bank statements and all other banking documents, correspondence, memoranda, invoices, computer printouts, tapes, discs, papers and other documents or transcribed information of any type, whether expressed in ordinary or machine language.

13.1.4 "Independent Certified Public Accountant" means a person duly registered in good standing and entitled to practice as a certified public accountant under the laws of the place of his/her residence or principal office and who is in fact independent.

13.1.5 "Audit," when used in regard to financial statements, means an examination of records by an independent certified public accountant in accordance with generally accepted accounting principles and auditing standards for the purpose of expressing a certified opinion thereon, or, in the alternative, a qualified opinion or a declination to express an opinion for stated reasons.

13.1.6 "Accountant's Report," when used in regard to financial statements, means a document in which an independent certified public accountant indicates the scope of the audit which he/she has made and sets forth his/her opinion regarding the financial statements taken as a whole with a listing of noted exceptions and qualifications, or an assertion to the effect that an overall opinion cannot be expressed. When an overall opinion cannot be expressed the reason therefore shall be stated. An accountant's report shall include a signed statement by the responsible corporate officer attesting that

management has fully disclosed all material facts to the independent certified public accountant, and that the audited financial statement is a true and complete statement of the financial condition of the Contractor.

13.1.7 "Management," when used herein, means the chief executive officers, partners, principals or other person or persons primarily responsible for the financial and operational policies and practices of the Contractor.

13.1.8 Accounting terms, unless otherwise defined herein shall mean, in accordance with generally accepted accounting principles and auditing standards.

13.2 RECORD KEEPING

13.2.1 The Contractor shall make, and keep for at least six years after final payment, books, records, and accounts which in reasonable detail accurately and fairly reflect the transactions and dispositions of the Contractor.

13.2.2 Until the expiration of six years after final payment, the Inspector General, the Owner, and the Department shall have the right to examine any books, documents, papers or records of the Contractor and Subcontractors that directly pertain to, and involve transactions relating to the Contractor and Subcontractors.

13.2.3 The Contractor shall describe any change in the method of maintaining records or recording transactions which materially affects any statements filed with the Owner including the date of the change and reasons therefore, and shall accompany said description with a letter from the Contractor's independent certified public accountant approving or otherwise commenting on the changes.

13.2.4 Prior to the execution of the Contract, the Contractor shall file a statement of management on internal accounting controls as set forth in Paragraph 13.3 below.

13.2.5 Prior to the execution of the Contract, the Contractor shall file an audited financial statement for the most recent completed fiscal year as set forth in Paragraph 13.4 below and will continue to file such statement annually during the term of the Contract.

13.3 STATEMENT OF MANAGEMENT CONTROLS

13.3.1 Prior to execution of the Contract, the Contractor shall file with the Owner a statement of management as to whether the system of internal accounting controls of the Contractor and its subsidiaries reasonably assures that:

- .1 transactions are executed in accordance with management's general and specific authorization;
- .2 transactions are recorded as necessary to:
 - a. to permit preparation of financial statements in conformity with generally accepted accounting principles, and
 - b. to maintain accountability for assets;
- .3 access to assets is permitted only in accordance with management's general or specific authorization; and
- .4 the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action was taken with respect to any difference.

13.3.2 Prior to execution of the Contract, the Contractor shall also file with the Owner a statement prepared and signed by an independent certified public accountant, stating that the accountant has examined the statement of management on internal accounting controls, and expressing an opinion as to:

- .1 whether the representations of management in response to subparagraph 13.3.1 above are consistent with the results of management's evaluation of the system of internal accounting controls; and
- .2 whether such representations of management are reasonable with respect to transactions and assets in amounts which would be material when measured in relation to the applicant's financial statement.

13.4 ANNUAL FINANCIAL STATEMENT

Every Contractor awarded a contract shall annually file with the Owner during the term of the Contract a financial statement prepared by an independent certified public accountant on the basis of an audit by such accountant. The final statement filed shall include the date of final payment. All statements shall be accompanied by an accountant's report.

ARTICLE 14

EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENTS

14.1 DEFINITIONS

For purposes of this Article 14, the following additional definitions shall apply:

14.1.1 "Minority" means Asian-Americans, Blacks, Western Hemisphere Hispanic Americans, North American Indians, Eskimos and Aleuts, and Cape Verdeans.

14.1.2 "Commission" or "MCAD" means the Massachusetts Commission Against Discrimination.

14.1.3 "E.E.O. Officer" or Equal Employment Opportunity Officer means those persons designated by the Contractor, the Owner, or any other agency or party having jurisdiction under this contract, that serve in a capacity to implement this Article.

14.2 CONDITIONS

14.2.1 The provisions of this Article 14 shall apply to the Contractor and all Subcontractors.

14.2.2 The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religious creed, national origin, age, handicap, or sex. The aforesaid provision shall include, but not be limited to, the following: employment upgrading, demotion or transfer; recruitment advertising; recruitment layoff; termination; rates of pay or other forms of compensation; conditions or privileges of employment; and selection for apprenticeship.

14.2.3 The Contractor shall post notices provided by the Commission, in conspicuous places, setting forth the provisions of the Fair Employment Practices Law of the Commonwealth.

14.2.4 The Contractor shall undertake in good faith affirmative action measures designed to eliminate any discriminatory barriers in the terms and conditions of employment on the grounds of race, color, religious creed, national origin, age, handicap, or sex, and to eliminate and remedy any effects of such discrimination in the past. Such affirmative action shall entail positive and aggressive measures to ensure equal opportunity in the areas of hiring, upgrading, demotion or transfer, recruitment, layoff or termination, rate of compensation, and in-service or apprenticeship training programs. This affirmative action shall include all action required to guarantee equal employment opportunity for all persons, regardless of race, color, religious creed, national origin, age or sex.

14.2.5 The Contractor shall not discriminate on grounds of race, color, religious creed, national origin, age, or sex in employment practices, in the selection or retention of Subcontractors, or in the procurement of materials and rentals of equipment.

14.2.6 The Commission and a designee of the Owner shall have access to the construction site and all applicable records of the Contractor and Subcontractors.

14.2.7 The Contractor's EEO Certificate must be signed by the low general and all filed sub-bidders as a condition of Contract validation by the Department.

14.3 MINORITY GOAL

14.3.1 The provisions of paragraphs 14.3 - 14.9 shall only apply to contracts with an advertised estimated value of \$100,000 or more.

14.3.2 The Contractor shall maintain a percent ratio of minority employee man-hours in each job category not less than the percentages found in Section 01100 of the Specifications. Such job categories shall include but not be limited to those "Classes of Work" enumerated in M.G.L. c.149 §44F and for trades covered by Item 1 of the Contractor's bid..

14.4 REFERRALS

14.4.1 In the hiring of minority journeymen, apprentices, trainees and advanced trainees, the Contractor shall rely on referrals from a multi-employer affirmative action program approved by the Department or the Commission; and traditional referral methods utilized by the construction industry, where such referrals are needed to meet minority hiring requirements. The Contractor shall keep accurate records of such requests for referrals.

14.4.3 Records of employment referral orders, prepared by the Contractor, shall be made available to the Owner and to the Department upon request.

14.5 WORK FORCE TABLES

14.5.1 The Contractor shall provide the weekly and quarterly information to the Owner on copies of forms that can be found in the Section 01110 of these Specifications.

14.6 COMPLIANCE - REPORTS AND INFORMATION

The Contractor shall provide all information and reports required by the Owner or the Department and will permit access to its facilities and to any books, records, accounts and other sources of information which may be determined by the Owner or the Department to affect the employment of personnel. Where information required is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to the Owner or the Department as appropriate and shall set forth what efforts have been made to obtain the information.

14.7 COMPLIANCE - INVESTIGATIONS

14.7.1 Whenever the Owner's EEO Officer, the MCAD, or the Department believes the Contractor may not be operating in compliance with the terms of these requirements, the Department shall conduct an investigation, and may confer with the parties, to verify such allegations. The Department shall not initiate an investigation without prior notice to the Contractor.

14.7.2 If the Department finds the Contractor in non-compliance, it shall make a preliminary report, and notify the Contractor in writing of the steps necessary to bring such Contractor into compliance. A copy of this report shall be sent to the Department's Affirmative Action Officer.

14.8 COMPLIANCE - DEPARTMENT - AFFIRMATIVE ACTION INVESTIGATION

14.8.1 If the Contractor fails or refuses to fully perform the steps necessary to achieve compliance, the Department shall make a report of non-compliance to the Department's Affirmative Action Officer, who will then conduct an investigation.

14.8.2 Should the Department's Affirmative Action Officer find the Contractor in non-compliance a final report recommending the imposition of one or more of the sanctions listed below shall be issued.

14.8.3 Within fifteen (15) days of said report the Department shall, after due notice and giving the Contractor an opportunity to respond, move to impose one or more of the following sanctions to attain compliance.

14.8.4 If the Department's Affirmative Action Office believes the Contractor has taken or is taking every possible measure to achieve compliance, a report shall show the Contractor is in compliance.

14.9 SANCTIONS

14.9.1 For each week that the Contractor fails or refuses to comply, the Department may recover from the Contractor, 1/100 of 1% of the original Contract Sum or \$1000 whichever sum is greater, in the nature of liquidated damages.

14.9.2 If a Subcontractor is in non-compliance, the Department may recover from the Contractor, 1/10 of 1% of the Subcontract Sum, or \$400 whichever sum is greater, in the nature of liquidated damages, to be assessed by the Contractor as a back charge against the Subcontractor for each week that Subcontractor fails or refuses to comply.

14.9.3 The Owner may suspend part or all of any payment due under the contract until such time as the Contractor or any Subcontractor is able to demonstrate compliance with the terms of the Contract;

14.9.4 The Owner may terminate, or cancel part or all of the Contract, in accordance with the provisions of Article 19, unless the Contractor or any Subcontractor is able to demonstrate, within a specified time, compliance with the terms of the Contract.

14.9.5 The Contractor may request the Department and Owner to suspend the sanctions conditionally. Whereupon the Department shall investigate corrective measures taken by the Contractor and shall either lift or re-impose the sanctions.

14.10 SEVERABILITY

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

ARTICLE 15
MINORITY OR WOMAN OWNED BUSINESS ENTERPRISES'
AFFIRMATIVE MARKET PROGRAM

15.1 DEFINITIONS:

For purposes of this Article 15, the following definitions shall apply:

15.1.1 "Minority" means a person who is a citizen or permanent resident of the United States and who is either:

Black, Western Hemisphere Hispanic, Native American Indians, Eskimo and Aleut, Asian, or Cape Verdeans as defined by Executive Order 390 the Affirmative Market Program.

15.1.2 "SOMWBA" means the State Office of Minority and Women Business Assistance,

15.1.3 "Minority Business Enterprise" (MBE) means a business organization which is owned and controlled fifty-one percent (51%) or more by one or more minority group members and certified as such by SOMWBA.

15.1.4 "Women Business Enterprise" (WBE) means a business organization which is owned and controlled fifty-one percent (51%) or more by one or more women and certified as such by SOMWBA.

15.1.5 "SOMWBA Certified Enterprise" (SCE) means a MBE or WBE as defined in 15.1.3 and 15.1.4.

15.1.6 "MBE/WBE Manufacturer" means a person or firm certified by SOMWBA and engaged in the process of making, fabricating, constructing, forming or assembling a product(s) from raw, unfinished, semi-finished, or finished materials through a direct contract with a contractor, subcontractor, or supplier.

15.1.7 "MBE/WBE Subcontractor" means a person or firm certified as such by SOMWBA and contractually engaged by the contractor to perform a portion (a) of the contracted Work, including labor, materials and supplies, or (b) labor, materials and supplies, or any combination thereof.

15.1.8 "MBE/WBE Supplier" means a person or firm certified as such by SOMWBA and engaged in selling of materials and supplies to contractors, subcontractors, and/or manufacturers for the purpose of constructing, repairing, remodeling, adding to or subtracting from, or improving any building, structure or property through a direct contract with a contractor or subcontractor. Said MBE/WBE must sustain substantial financial risk in the process of performing/supplying the work for this contract. The Department may request information to determine where the MBE/WBE obtains supplies and materials.

15.1.9 "Amount of Participation" means the percentage stated on the advertisement of the final contract amount which is to be contracted to SCEs for work to be performed on this contract in accordance with this Article 15.

15.2 JOINT VENTURES

15.2.1 A Joint Venture shall mean a business arrangement between SOMWBA-certified M/WBEs and a non-SOMWBA certified General Contractor, in which the MBE or WBE has at least a twenty-five percent (25%) interest in the Contract, and in which the other has at least the required minimum percentage of participation in the Contract. It is expected that the M/WBE having the minimum 25% interest will participate in the management and decision making aspects of the project proportionate to its percentage of ownership and interest in the Contract.

15.2.2 An M/WBE Joint Venture shall mean a business arrangement wherein a SOMWBA certified MBE or WBE serves as a General Contractor and engages the services of another SOMWBA certified MBE or WBE (whichever is required) in an amount not less than twenty-five percent (25%) of the Contract amount, and in which the management and decision making aspects of the project are shared to the degree of participation and ownership in the Contract.

15.3 CONDITIONS

The provisions of this Article 15 shall apply to all contracts with an advertised estimate of \$50,000 or greater.

15.3.1 Once the Contractor agrees to comply with these provisions, and within 5 working days after receipt of bids, unless an extension of time or waiver for compliance is granted in accordance with Article 3 of the Instructions to Bidders, the apparent low bidder must submit a completed Participation Schedule and Letters of Intent covering each SCE used to satisfy the requirements of this Article 15. These letters shall include the contract items the SCE is proposing to perform and the prices that the SCE proposes to charge for the work.

15.3.2 SCEs listed on the Participation Schedule may be any combination of MBE/WBE Subcontractors, MBE/WBE Manufactures, or MBE/WBE Suppliers as defined in Paragraph 15.1.

15.3.3 Letters of Intent are not required from filed sub-bidders who are SCEs.

15.3.4 The amount of participation of SCEs listed in The Participation Schedule must total at least the percentage set forth in the Advertisement. The amounts indicated in the Letter of Intent shall not be less than the amount shown on the Participation Schedule. The SCEs for whom Letters of Intent are submitted must be identical to the ones listed on the Participation Schedule. No substitutions shall be made without the written approval of the Department.

15.3.5 Prior to the Validation of the Contract, the Contractor shall furnish the Owner and the Department with executed copies of all subcontracts with all of the SCEs listed on the Participation Schedule.

15.3.6 Subcontractors are encouraged, but not required to subcontract portions of their work to SCEs. Participation forms, available with the bidding documents shall be used to list those SCEs with whom they wish to sub-subcontract and the dollar amount of those proposed sub-subcontracts.

15.3.7 The Contractor may include SCEs utilized by non-certified subcontractors to satisfy the requirements of this article.

15.3.8 SCEs listed on the Participation Schedule must be SOMWBA certified MBEs and WBEs at the time of the opening of bids.

15.3.9 MBE/WBE Certification from any other agency/municipality shall not be considered applicable for this Contract

15.3.9.1 The Department reserves the right to allow a SCE to perform work other than those categories listed on the SCE's SOMWBA certification.

15.3.10 If a filed sub-bidder listed as a SCE is rejected for failure to obtain a performance and payment bond from a surety qualified to do business in the Commonwealth when requested by the general bidder to do so at the time of bid, said failure shall not entitle the general bidder to avoid the requirements of this Article 15.

15.3.11 The Contractor shall not change the SCEs listed in the Participation Schedule or make any other such SCE substitutions after the Contract has been executed or during construction without the written approval of the Owner and the Department.

15.3.12 The Contractor shall not terminate any subcontract for, nor perform with its own organization, work designated to an SCE on the Participation Schedule without the written approval of the Owner and the Department. Such approval shall be withheld until the Contractor demonstrates that the Amount of Participation is still met for any substituted SCE, provided however, that compliance with this paragraph shall not supercede the terms of M.G.L. c.149 §44F. Notice of all M/WBE status changes (before Final Completion) must be sent to **Not Applicable**.

15.4 COMPLIANCE

15.4.1 The Contractor must provide information as is necessary, in the judgment of the Owner or the Department, to ascertain compliance with the terms of this Article 15.

15.4.2 The Contractor shall provide, an executed Contractor's Affidavit of Payment to Minority Business Enterprises as found in Section 01110 of these Specifications.

15.4.3 If the Contractor desires to comply with this Article 15, but for reasons beyond its control cannot do so in accordance with the Participation Schedule, the Contractor must submit to the Owner and the Department the reason for its inability to comply and proposed revisions to the Participation Schedule stating how conditions of this Article 15 are to be met.

15.5 SANCTIONS

15.5.1 If at anytime during the life of this Contract, the Contractor is found to be out of compliance with Article 15, sanctions may be imposed within fifteen (15) working days after notification to the Contractor of said violation. If within those fifteen (15) days the Contractor remedies the non-compliance to the satisfaction of the Department, or provides compelling documentation as outlined in Article 15.6.2, said sanctions may be postponed or waived. If the Contractor requires more than fifteen (15) days to remedy non-compliance, it shall make a written request to the Department for a time extension. This request shall be made within the original fifteen (15) day period.

15.5.2 If the Contractor fails to comply with the terms of these conditions, the Owner may impose the following sanctions:

- .1** require the Contractor to provide equivalent substitute participation with SCEs acceptable to the Owner and Department and at no additional cost to the Owner., or
- .2** suspend any payment for the Work that should have been but was not performed by an SCE pursuant to the Participation Schedule.

15.5.3 To the extent that the Contractor has not complied with the terms of these conditions, the Owner may withhold from any Certificate for Payment moneys equivalent to the product of the percentage of completion times the SCE dollar amount, minus the amount already paid to SCEs for Work performed under the contract, minus any amounts withheld for previous non-compliance.

15.6 RECOURSE

15.6.1 The Owner and the Department have the option not to impose sanctions if the Contractor demonstrates, to the satisfaction of the Department, that the Contractor has taken every possible measure to comply with Article 15. This may constitute a reason for waiving this Article in whole or in part.

15.6.2 To demonstrate every possible measure, the Contractor shall furnish:

- .1** the name of each firm solicited for quotations on each Subcontract, the price quoted by each, and whether or not the firm solicited was a minority or woman-owned business;
- .2** the reason for not subcontracting with a minority or woman-owned business enterprise when applicable;
- .3** evidence showing efforts by the Contractor to supplement its own and SOMWBA lists of minority and woman-owned business sources by contacting the Small Business Administration, trade organizations, the General Services Administration (U.S. Government), minority contractors' organizations, community organizations and other likely sources of names of additional minority or woman-owned business firms capable of performing the Work; and
- .4** evidence showing other efforts to comply with this Article 15.

15.7 WAIVERS

The Department reserves the right, in its sole discretion, to waive all, or a portion of the requirements of this Article 15.

15.8 SEVERABILITY

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

ARTICLE 16 INSURANCE

16.1 INSURANCE REQUIREMENTS

16.1.1 The Contractor shall take out and maintain insurance coverage as listed in subparagraphs 16.2 - 16.8 with respect to the operations as well as the completed operations of this Contract. This insurance shall be provided at the Contractor's expense and shall be in full force and effect for the full term of the Contract.

16.1.2 All policies shall be issued by companies authorized to write that type of insurance under the laws of this Commonwealth of Massachusetts.

16.2 CONTRACTOR'S COMMERCIAL GENERAL LIABILITY

16.2.1 Provide the following minimum coverage with respect to the operations performed by any employee, Subcontractor, or supplier:

Bodily Injury &	\$1,000,000. each occurrence
Property Damage	\$1,000,000. general aggregate
Products & Completed Operations	\$1,000,000. aggregate
Personal & Advertising Injury	\$1,000,000. each occurrence

16.2.2 This policy shall include coverage relating to explosion, collapse, and underground property damage.

16.2.3 This policy shall include contractual liability coverage.

16.2.4 The Contractor shall provide a separate Owner's and Contractor's Protective Liability policy in the name of the Owner at the same limits listed above.

16.2.5 The completed operations coverage shall be maintained for a period of two (2) years after Substantial Completion as defined in subparagraph 9.6.1.

16.3 VEHICLE LIABILITY

Provide the following minimum coverage with respect to the operations of any employee, including coverage for owned, non-owned, and hired vehicles:

Bodily Injury and	\$ 1,000,000. each person
Property Damage	\$ 1,000,000. each accident
	Combined Single Limit of \$1,000,000

16.4 WORKER'S COMPENSATION

Provide the following coverage in accordance with M.G.L. c.149 §34A and c.152 as amended:

Worker's Compensation	
Coverage A	Provide Statutory Minimum
Employer's Liability	\$ 500,000. each accident
Coverage B	\$ 500,000. disease per employee
	\$ 500,000. disease policy

16.5 PROPERTY COVERAGE

16.5.1 Provide Special Perils coverage against loss or damage by fire and against loss or damage covered by the special perils insurance endorsement on all work included in this contract in an amount equal to at least 80% of Contract Amount.

16.5.2 When work will be completed on existing buildings owned by the Owner, the Contractor shall provide an installation floater, in the full amount of the Contract, for the requirements set forth in Subparagraph 16.5.

16.5.3 This policy and/or installation floater shall indicate if Stored Materials coverage is provided as required by Paragraph 10.4.

16.6.1 The policy or policies shall specifically state that they are for the benefit of and payable to the Owner, the Department, the Contractor, and all persons furnishing labor or labor and materials for the Contract Work, as their interests may appear

16.6.2 The Special Perils coverage shall include any costs for work performed by the Prime Designer or any consultant as the result of a loss experienced during the life of this contract.

16.7 OWNER AS ADDITIONAL INSURED

The Owner and Department shall be named as additional insured on the Contractor's Commercial Liability Policies.

16.8 CERTIFICATES OF INSURANCE, POLICIES

16.8.1 Certificates of insurance, acceptable to the Owner, shall be submitted to the Owner simultaneously with the execution of the Contract. Certificates shall indicate that the contractual liability coverage, and Owner's and Contractor's Protective Liability coverage is in force, as well as the deletions of the XCU exclusions.

16.8.2 The Contractor shall file the original and one certified copy of all policies with the Owner and one with the Department within sixty days after Contract award. If the Owner is damaged by the Contractor's failure to maintain such insurance and to so notify the Owner, then the Contractor shall be responsible for all reasonable costs attributable thereto.

16.9 CANCELLATION

Cancellation of any insurance required by this contract, whether by the insurer or the insured, shall not be valid unless written notice thereof is given by the party proposing cancellation to the other party and Owner at least thirty days prior to the effective date thereof, which shall be expressed in said notice

ARTICLE 17 INDEMNIFICATION

The Contractor shall take all responsibility for the Work and take all precautions for preventing injuries to persons and property in or about the Work; shall bear all losses resulting from or on account of the amount or character of the Work. The Contractor shall pay or cause payment to be made for all labor performed or furnished and for all materials used or employed in carrying out this Contract. The Contractor shall assume the defense of, and indemnify and save harmless, the Prime Designer, the Owner, the Department and their officers and agents from all claims relating to: labor performed or furnished and materials used or employed for the Work; inventions, patents and patent rights used in and in doing the Work unless such patent infringement is due to a product or process specified by the Owner; injuries to any person or corporation received or sustained by or from the Contractor and any employees, and Subcontractors and employees, in doing the work, or in consequence of any improper materials, implements or labor used or employed therein; and any act, omission, or neglect of the Contractor and any employees.

ARTICLE 18 PERFORMANCE AND PAYMENT BONDS

18.1 CONTRACTOR BONDS

18.1.1 The Contractor shall provide the Owner with performance and payment (labor and materials) bonds in the form provided by the Department, executed by a surety licensed by the Commonwealth's Division of Insurance. Each such bond shall be in the amount of the Contract Sum.

18.1.2 If at any time prior to final payment to the Contractor, the Surety:

- .1** is adjudged bankrupt or has made a general assignment for the benefit of its creditors;
- .2** has liquidated all assets and has made a general assignment for the benefit of its creditors;
- .3** is placed in receivership;
- .4** otherwise petitions a state or federal court for protection from its creditors; or
- .5** allows its license to do business in Massachusetts to lapse or be revoked;

the Contractor shall, within 21 days of any such action listed above, provide the Owner with new performance and payment bonds as described in Paragraph 18.1.1. Such bonds shall be provided solely at the Contractor's expense.

18.2 SUBCONTRACTOR BONDS

18.2.1 The Contractor may list in its bid that any or all filed Subcontractors provide the Contractor with payment and performance bonds for the full amount of the Subcontract. The costs for said bonds shall be the responsibility of the Contractor.

18.2.2 In the event the Contractor lists in its bid that filed Subcontractors provide bonds, and subsequently waives the requirement, the Contractor shall provide the Owner with a certification that they understand if the filed subcontractor defaults or is terminated, the Contractor accepts full responsibility and costs related to said default or termination with a credit change order in an amount equal to the bond premium it would have paid had it required the filed Subcontractor-to provide such bonds.

ARTICLE 19 TERMINATION

19.1 TERMINATION FOR CAUSE

19.1.1 The Owner may terminate this contract for cause if it determines that any of the following circumstances have occurred:

- .1** The Contractor is adjudged bankrupt or has made a general assignment for the benefit of its creditors;
- .2** A receiver has been appointed of the Contractor's property;
- .3** All or a part of the Work has been abandoned;
- .4** The Contractor has sublet or assigned all or any portion of the Work, the Contract, or claims there under, without the prior written consent of the Owner, except as provided in the Contract;
- .5** The Prime Designer has determined that the rate of progress required on the project is not being met, or
- .6** The Contractor has substantially violated any provisions of this Contract.

19.1.2 In the event of such termination, the Owner may hold the Contractor and its sureties liable in damages as for a breach of contract, or the Owner may notify the Contractor to discontinue all work, or any part thereof, and the Contractor shall discontinue all work, or any part thereof, as the Owner may designate.

19.1.3 The Owner may complete the work, or any part thereof, and charge the expense of completing the Work or part thereof, to the Contractor.

19.1.4 The Owner may take possession of and use any materials, machinery, implements and tools found upon the site of said Work. The Owner shall not be liable for any depreciation, loss or damage to said materials, machinery, implements or tools during said use and the Contractor shall be solely responsible for their removal from the Project site after the Owner has no further use for them.

19.1.5 The Owner may, at its option, require the surety or sureties to complete the Contract.

19.2 TERMINATION LIABILITIES

19.2.1 All expenses charged under Paragraph 19.1 shall be deducted and paid by the Owner out of any moneys then due or to become due the Contractor under this Contract; and in such accounting the Owner shall not be held to obtain the lowest figures, by competitive bid or otherwise, for the completion of the Work or any part thereof.

19.2.2 All sums actually paid by the Owner to complete the Work shall be charged to the Contractor. In case the expenses charged are less than the sum which would have been payable under this Contract if the same had been completed by the Contractor, the Contractor shall be entitled to receive the difference. In case such expenses shall exceed the said sum, the Contractor shall pay the amount of the excess to the Owner.

19.2.3 Expenses incurred under subparagraph 19.1 shall also include, but not be limited to, costs for Architectural extra services and Project Representative services required, in the opinion of the Owner, to successfully inspect and administer the construction contract through final completion, as described in Paragraph 9.7.

19.3 TERMINATION - NO FAULT

19.3.1 In the event that this Contract is terminated by the Owner, and termination is not based on a reason listed in Paragraph 19.1, the Contractor shall be compensated for its costs incurred on the Project, including reasonable costs of de-mobilization, calculated on a percent completion basis as provided in Article 10, covering the period of time between the last periodic payment and the date of termination.

19.3.2 Payment by the Owner pursuant to Subparagraph 19.3.1 shall be considered to fully compensate the Contractor for all claims and expenses and those of any consultants, Subcontractors, and suppliers, directly or indirectly attributable to the termination, including any claims for lost profits.

19.4 ADMINISTRATOR'S APPROVAL

Termination of the Contract requires the prior approval of the Administrator.

**SECTION 01010
SUMMARY OF WORK**

1. GENERAL SCOPE OF WORK

A. The Work under the Contract consists of:

- (1.)** The Project consists of upgrading the existing heating plant arrangement and installing one new wood pellet fired boiler. The new wood pellet boiler will require new venting. A buffer tank will be installed to provide additional volume to the heating loop. The work also includes the replacement of the existing expansion tanks, circulators and other appurtenances. The construction start date is 1 April 2016.
- (2.)** All Work either shown on the Drawings or included in the specifications unless specifically indicated as not to be done.

B. In addition, the Work under the Contract includes:

- (1.)** Work outside the Project Site as called for in the Contract Documents and as required for the performance of the Work.
- (2.)** The restoration of any items damaged or destroyed by encroaching upon areas outside the Project Site.
- (3.)** Providing and restoring, where appropriate, all temporary facilities.

2. TIME OF COMPLETION

- A.** In accordance with Article 9 of the General Conditions, the Work shall start as stated in the Notice to Proceed and shall be complete within **60** consecutive calendar days.

3. WORK UNDER SEPARATE CONTRACT

A. Coordination by Owner

- (1.)** As provided in Article 7 of the General Conditions, the following items shall be provided by others under a separate agreement with the Owner for which the Owner has coordinating responsibility.
 - (a.)** The Owner will remove and reinstall the existing ceilings in the work area under a separate contract to accommodate the new work under this Contract.

B. Coordination by Contractor

(1.)The following items shall be provided by others under a separate agreement with the Owner for which the Contractor has coordinating responsibility.

(a.)The Contractor shall coordinate with the Owner the required access needed to perform the work.

(b.)None.

4. ITEMS FURNISHED BY OWNER

A. The following items will be furnished and delivered f.o.b. to the Project Site by others at no expense to the Contractor.

(1.) None.

B. The Contractor shall include in the Contract Sum the cost of unloading, uncrating, and permanently installing the above listed items; also removal and proper disposal off the Project Site of all crating and packing materials.

5. SAMPLE BUILDING

A. Not applicable.

6. PHASING

A. The Owner shall make the entire building available to the Contractor as designated on the drawings. The building and site shall remain operational throughout the entire construction performance period.

B. The Owner shall occupy the existing building at all times.

(1.)The Contractor must provide dust protection and secure the property in the work areas.

(2.)The Contractor must maintain the existing building weather tight and secure to accommodate the Owner's daily operations at all times.

C. The abutting site/operations will be fully operational. Safety is of paramount importance for this Project. The Contractor must take measures to secure the site in a safe manner at all times.

END OF SECTION

**SECTION 01030
ALTERNATES**

1. SCOPE

- A.** This Section lists the Alternates which appear in the Contract Documents. Consult the individual sections of the detailed requirements of each Alternate.
- B.** Bid prices for each Alternate shall include overhead, profit, and all other expenses incidental to the Work under each Alternate.
- C.** The Contractor and Subcontractors shall be responsible for examining the scope of each Alternate generally defined herein and for recognizing modifications to the Work caused by the Alternates and including the cost thereof in the bid price.

- 2. ADD ALTERNATE NO. 1:** Provide all labor and material to replace four (4) existing pumps (P-6, P-7, P-8 and P-9) and to install five (5) new pumps as indicated on the pump schedule on drawing M-1.

END OF SECTION

SECTION 01045 CUTTING AND PATCHING

1. RELATED DOCUMENTS

- A. This section supplements the General Conditions.
- B. Consult the individual sections of the specifications for specific items required under those sections.

2. WORK INCLUDED

- A. Unless specified elsewhere, the Contractor shall be responsible for:
 - 1. All cutting and patching required for the project construction.
 - 2. Products and installation for patching and extending Work.
 - 3. Transition and adjustments.
 - 4. Repair of damaged surfaces, finishes, and cleaning
- B. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.

3. EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed before cutting, including elements subject to damage or movement during cutting and patching. If unsafe or unsatisfactory conditions are encountered, take corrective action before proceeding.
- B. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the Prime Designer's opinion, reduce the building's aesthetic qualities. Do not cut and patch construction in a manner that would result in visual evidence of cutting and patching. Remove and replace construction cut and patched in a visually unsatisfactory manner.
- C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Beginning of cutting or patching means acceptance of existing conditions.
- E. After uncovering existing Work, assess conditions affecting performance of work.

4. PREPARATION

- A. Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.

- B.** Before proceeding, meet at the Project Site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
- C.** Provide temporary supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of Project from damage.
- D.** Close openings in exterior surfaces to protect existing work [and salvage items] from weather and extremes of temperature and humidity. Insulate duct work and piping to prevent condensation in exposed areas.
- E.** Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion.
- F.** Remove unsuitable material not marked for salvage, such as rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.
- G.** Remove debris and abandoned items from area and from concealed spaces.
- H.** Prepare surface and remove surface finishes to provide for proper installation of new work and finishes.

5. CUTTING

- A.** Execute all cutting and fitting necessary to complete the Work.
- B.** Where services are required to be remove, relocated, or abandoned, by-pass utility services, such as pipe or conduit, before cutting. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.
- C.** Uncover work to install improperly sequenced work.
- D.** Remove and replace defective or non-conforming work.
- E.** Provide openings in the Work for penetration of mechanical and electrical work. Cut holes and slots as small as possible, nearly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover opening when not in use.
- F.** Employ skilled and experienced workers to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
- G.** Cut rigid materials using power saw or core drill. Cut through concrete and masonry using a cutting machine, such as a Carborundum saw or a diamond-core drill. Pneumatic tools shall not be allowed without prior approval.

- H. Cut existing construction using methods least likely to damage elements retained or adjoining construction. Where possible, review proposed procedures with the original Installer; comply with the original Installer's recommendations.
- I. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
- J. Comply with requirements of applicable Division 2 Sections where cutting and patching requires excavating and backfilling.
- K. Do not cut structural elements in a manner that would change their load-carrying capacity or load-deflection ratio.
- L. Do not cut operating elements or related components in a manner that would result in reducing their capacity to perform as intended. Do not cut operating elements or related components in a manner that would result in increased maintenance or decreased operational life or safety.

6. PATCHING

- A. Execute patching to complement adjacent, undisturbed finishes.
- B. Fit products together to integrate with other Work.
- C. Execute work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.
- D. Restore work with new products in accordance with requirements of Contract Documents.
- E. Fit work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- F. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with appropriate material to full thickness of the penetrated element as necessary to maintain the required rating.
- G. Where new work abuts or aligns with existing, perform a smooth and even transition. Patch work to match existing adjacent work in texture and appearance. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
- H. Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible if identical materials are unavailable or cannot be used. Use materials whose installed performance will equal or surpass that of existing materials.

- I. Patch with durable seams that re as invisible as possible. Comply with specified tolerances.
- J. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
- K. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
- L. Where walls or partitions are to be removed, patch and repair voids left in floor, wall and ceiling surfaces where the existing construction is removed. Provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
- M. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken surface containing the patch after the area has received primer and second coat.
- N. Patch, repair, or re-hang existing ceilings as necessary to provide an even-plane surface of uniform appearance.
- O. Refer to applicable Sections of Division 9 for plastering requirements. In lieu of specific requirements, comply with the following:
 - 1. Comply with ASTM C 842
 - 2. Comply with manufacturer's instructions and install thickness and coats as indicated.
 - 3. Unless otherwise indicated, provide 3-coat work.
 - 4. Base Coat: Ready-mixed, sand aggregate gypsum plaster base.
 - 5. Finish Coat: Ready-mixed gypsum finish plaster.
 - 6. Finish gypsum plaster to match existing adjacent surfaces. Sand lightly to remove trowel marks and arises.

7. CLEANING

- A. In addition to cleaning specified in Section 01520, clean all areas affected by the work of this Section.
- B. Completely remove paint, mortar, oils, putty, and similar items.
- C. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

END OF SECTION

**SECTION 01050
CONDUCT OF THE WORK**

1. GENERAL PROVISIONS

- A. The Conditions of the Contract and other Sections of Division I, General Requirements apply to this section.

2. PROJECT MANAGEMENT

- A. The Contractor's attention is directed to Paragraph 4.3 of the General Conditions.
- B. The abutting Town site will be occupied during construction. The Contractor shall take all necessary precautions to ensure the public safety and convenience of the occupants during construction.
- C. The work must be completed in a continuous uninterrupted operation. The Contractor must use sufficient personnel and adequate equipment to complete all the necessary work requirements within a minimum period of time.
- D. Unless specifically authorized by the Owner, in writing, the work must be conducted between the hours of 7:30 a.m. and 4:30 p.m. on Monday through Friday. No work is to be done on holidays, Saturdays, or Sundays other than for emergencies and as scheduled with the Owner.
- E. The Contractor is responsible for the security of partially completed work until the project is accepted by the Owner.
- F. There shall be no storage of materials, tools, and/or equipment within any of the existing structures on the site. Any storage within an existing structure must be authorized by the Owner, in writing.
- G. Only materials and/or equipment intended and necessary for immediate use shall be brought onto the site. At the end of each workday and at the completion of each phase of work, equipment and leftover or unused materials shall be properly stored.
- H. The Owner and public will occupy the site during each workday.

3. SHUTDOWN OF SERVICES

- A. The Contractor's attention is especially called to the fact that the continuous operation of services for this building and site is mandatory. If the site is to be left without heat, hot water, domestic water, electricity, gas, sanitary facilities or any other services for more than an eight hour period, the Contractor shall submit a letter and obtain written approval from the Owner before proceeding. If the Owner will not allow this shutdown, but wants instead a temporary means of supplying said services, the Contractor shall supply all labor, materials or whatever may be required to supply said temporary services at no extra cost to the Owner and in accordance with the state and local regulations on health and safety.

4. COORDINATION

- A.** The Contractor shall submit for approval to the Owner a detailed operational plan showing the sequence of operations prior to commencement of any work at the site. The Owner must approve any changes to this operational plan.
- B.** The Contractor must retain on the Work during its progress a competent full time representative, satisfactory to the Owner. This representative shall not be changed, except with the consent of the Owner. The representative shall be in full charge of the work and all instructions given to this person by the Prime Designer shall be binding.
- C.** The Contractor must supply to the Owner the home telephone number of a responsible person who may be contacted during non-work-hours for emergencies on the Project.
- D.** Whenever work is to be done inside an existing building the Contractor's superintendent and an Owner's representative shall conduct a pre-work inspection of each building to make note of existing conditions in the building. Special attention should be paid to areas where new work will meet existing conditions.

5. OWNER'S COOPERATION

- A.** The Owner shall assist the Contractor to perform the Work in accordance with the approved operational plan by removing obstructions that may be in the Contractor's way, upon proper notice from the Contractor.
- B.** The Owner may provide a Clerk to act as liaison with public, neighbors and Town employees, and to assist the Contractor in fulfilling the following:
 - (1.)** Notifying all abutters/Town employees two (2) weeks before any work is scheduled at the site.

6. RETAINED ITEMS

- A.** The following items which are to be removed and are in good condition shall be retained by the Owner (at the discretion of the Owner) and shall be stored at a location directed by the Owner.
 - (1.)** None.

END OF SECTION

**SECTION 01100
LABOR REGULATIONS**

1. WAGE RATES

- A.** The rate per hour to be paid to mechanics, apprentices, teamsters, chauffeurs, and laborers employed on the Work shall not be less than the rate of wages in the attached "Minimum Wage Rates" as determined by the Director of the Department of Labor and Work Force Development. This schedule shall continue to be the minimum rate of wages for said employees during the life of this Contract. Any questions relative to the applicability of any wage rate shall be directed to the Department of Labor and Workforce Development.
- B.** Keep posted on the site a legible copy of said schedule. Provide the Owner, on a weekly basis, and keep an on-site file of the wage rates and classifications of labor employed on this Work in order that they may be available for inspection by the Owner, Department, Prime Designer, or any other agency having jurisdiction. .
- C.** Apprentices employed pursuant to this determination of wage rates must be registered and approved by the State Apprenticeship Council wherever rates for journeymen or apprentices are not listed.
- D.** Pay reserve police officers employed on the Work the prevailing rate of wages paid to regular police officers as required by MGL c149 § 34B, as amended. Such police officers shall be covered by Worker's Compensation Insurance and Employers Liability Insurance provided by the Contractor.
- E.** The Contractor and all subcontractors shall provide certified payroll affidavits verifying compliance with MGL c.149 §§26 - 27H.
- F.** The Contractor and all subcontractors shall provide a Statement of Compliance within 15 days of the completion of its portion of the work. This statement shall be submitted to the Owner on the form found elsewhere in this section.
- G.** The Contractor and all its subcontractors shall furnish to the Owner, with the first certified payroll report, documentation indicating that each employee has successfully completed 10 hours of a course in construction safety and health. This course must be approved by the United States Occupational Health and Safety Administration (OSHA).

SEE ATTACHED WAGE RATES 32 PAGES

END OF SECTION



**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**

RONALD L. WALKER, II
Secretary

WILLIAM D MCKINNEY
Director

CHARLES D. BAKER
Governor

KARYN E. POLITO
Lt. Governor

Awarding Authority: Town of Northfield
Contract Number: **City/Town:** NORTHFIELD
Description of Work: Town Hall Wood Pellet Boiler Project - Upgrade the existing heating system and install a wood pellet fired boiler.
Job Location: 69 Main Street, Northfield, MA

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- 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 from the Department of Labor Standards (“DLS”) 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 any sub-contractor.
- All apprentices working on the project are required to be registered with the Massachusetts Division of Apprentice Standards (DAS). Apprentice must keep his/her apprentice identification card on his/her person 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. **If an apprentice rate is not listed on the prevailing wage schedule for the trade in which an apprentice is registered with the DAS, the apprentice must be paid the journeyworker's rate for the trade.**
- 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. Awarding authorities are required to request these updates 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, 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. Contractors are required to obtain the wage schedules from awarding authorities, and to pay no less than these rates to covered workers. The annual update requirement is not applicable to 27F “rental of equipment” contracts.
- Every contractor or subcontractor which performs construction work on the project is required to 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. A sample of a payroll reporting form may be obtained at <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.
- Employees not receiving the prevailing wage rate set forth on the wage schedule may report the violation to the Fair Labor Division of the office of the Attorney General at (617) 727-3465.
- 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.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2015	\$31.65	\$10.41	\$10.08	\$0.00	\$52.14
	06/01/2016	\$32.15	\$10.41	\$10.08	\$0.00	\$52.64
	08/01/2016	\$32.15	\$10.91	\$10.08	\$0.00	\$53.14
	12/01/2016	\$32.15	\$10.91	\$10.89	\$0.00	\$53.95
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2015	\$31.72	\$10.41	\$10.08	\$0.00	\$52.21
	06/01/2016	\$32.22	\$10.41	\$10.08	\$0.00	\$52.71
	08/01/2016	\$32.22	\$10.91	\$10.08	\$0.00	\$53.21
	12/01/2016	\$32.22	\$10.91	\$10.89	\$0.00	\$54.02
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2015	\$31.84	\$10.41	\$10.08	\$0.00	\$52.33
	06/01/2016	\$32.34	\$10.41	\$10.08	\$0.00	\$52.83
	08/01/2016	\$32.34	\$10.91	\$10.08	\$0.00	\$53.33
	12/01/2016	\$32.34	\$10.91	\$10.89	\$0.00	\$54.14
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 3)</i>	08/01/2015	\$90.51	\$9.80	\$18.17	\$0.00	\$118.48
AIR TRACK OPERATOR <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2015	\$29.50	\$7.30	\$11.58	\$0.00	\$48.38
	12/07/2015	\$30.18	\$7.30	\$11.58	\$0.00	\$49.06
	06/06/2016	\$30.87	\$7.30	\$11.58	\$0.00	\$49.75
	12/05/2016	\$31.55	\$7.30	\$11.58	\$0.00	\$50.43
For apprentice rates see "Apprentice- LABORER"						
AIR TRACK OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	12/01/2015	\$29.74	\$7.30	\$10.18	\$0.00	\$47.22
	06/01/2016	\$30.24	\$7.30	\$10.18	\$0.00	\$47.72
	12/01/2016	\$30.99	\$7.30	\$10.18	\$0.00	\$48.47
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
ASBESTOS WORKER (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (SPRINGFIELD)</i>	12/01/2015	\$30.94	\$10.40	\$5.45	\$0.00	\$46.79
ASPHALT RAKER <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2015	\$29.00	\$7.30	\$11.58	\$0.00	\$47.88
	12/07/2015	\$29.68	\$7.30	\$11.58	\$0.00	\$48.56
	06/06/2016	\$30.37	\$7.30	\$11.58	\$0.00	\$49.25
	12/05/2016	\$31.05	\$7.30	\$11.58	\$0.00	\$49.93
For apprentice rates see "Apprentice- LABORER"						
ASPHALT RAKER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	12/01/2015	\$29.24	\$7.30	\$10.18	\$0.00	\$46.72
	06/01/2016	\$29.74	\$7.30	\$10.18	\$0.00	\$47.22
	12/01/2016	\$30.49	\$7.30	\$10.18	\$0.00	\$47.97
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
AUTOMATIC GRADER-EXCAVATOR (RECLAIMER) <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2015	\$32.97	\$10.18	\$11.74	\$0.00	\$54.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER OPERATOR <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2015	\$32.97	\$10.18	\$11.74	\$0.00	\$54.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2015	\$29.00	\$7.30	\$11.58	\$0.00	\$47.88
	12/07/2015	\$29.68	\$7.30	\$11.58	\$0.00	\$48.56
	06/06/2016	\$30.37	\$7.30	\$11.58	\$0.00	\$49.25
	12/05/2016	\$31.05	\$7.30	\$11.58	\$0.00	\$49.93
For apprentice rates see "Apprentice- LABORER"						
BATCH/CEMENT PLANT - ON SITE <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2015	\$32.44	\$10.18	\$11.74	\$0.00	\$54.36

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2015	\$29.50	\$7.30	\$11.58	\$0.00	\$48.38
	12/07/2015	\$30.18	\$7.30	\$11.58	\$0.00	\$49.06
	06/06/2016	\$30.87	\$7.30	\$11.58	\$0.00	\$49.75
	12/05/2016	\$31.55	\$7.30	\$11.58	\$0.00	\$50.43
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	12/01/2015	\$29.74	\$7.30	\$10.18	\$0.00	\$47.22
	06/01/2016	\$30.24	\$7.30	\$10.18	\$0.00	\$47.72
	12/01/2016	\$30.99	\$7.30	\$10.18	\$0.00	\$48.47
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2015	\$40.32	\$6.97	\$16.21	\$0.00	\$63.50
	01/01/2016	\$41.62	\$6.97	\$16.21	\$0.00	\$64.80
	01/01/2017	\$42.92	\$6.97	\$16.21	\$0.00	\$66.10

Apprentice - BOILERMAKER - Local 29

Effective Date - 01/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	\$26.21	\$6.97	\$10.54	\$0.00	\$43.72
2	65	\$26.21	\$6.97	\$10.54	\$0.00	\$43.72
3	70	\$28.22	\$6.97	\$11.35	\$0.00	\$46.54
4	75	\$30.24	\$6.97	\$12.16	\$0.00	\$49.37
5	80	\$32.26	\$6.97	\$12.97	\$0.00	\$52.20
6	85	\$34.27	\$6.97	\$13.78	\$0.00	\$55.02
7	90	\$36.29	\$6.97	\$14.59	\$0.00	\$57.85
8	95	\$38.30	\$6.97	\$15.40	\$0.00	\$60.67

Effective Date - 01/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	\$27.05	\$6.97	\$10.54	\$0.00	\$44.56
2	65	\$27.05	\$6.97	\$10.54	\$0.00	\$44.56
3	70	\$29.13	\$6.97	\$11.35	\$0.00	\$47.45
4	75	\$31.22	\$6.97	\$12.16	\$0.00	\$50.35
5	80	\$33.30	\$6.97	\$12.97	\$0.00	\$53.24
6	85	\$35.38	\$6.97	\$13.78	\$0.00	\$56.13
7	90	\$37.46	\$6.97	\$14.59	\$0.00	\$59.02
8	95	\$39.54	\$6.97	\$15.40	\$0.00	\$61.91

Notes:

Apprentice to Journeyworker Ratio:1:5

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) <i>BRICKLAYERS LOCAL 3 (SPRINGFIELD/PITTSFIELD)</i>	08/31/2015	\$38.36	\$10.18	\$16.73	\$0.00	\$65.27
	02/29/2016	\$38.93	\$10.18	\$16.73	\$0.00	\$65.84
	09/05/2016	\$39.83	\$10.18	\$16.81	\$0.00	\$66.82
	02/27/2017	\$40.40	\$10.18	\$16.81	\$0.00	\$67.39

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 08/31/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.18	\$10.18	\$16.73	\$0.00	\$46.09
2	60	\$23.02	\$10.18	\$16.73	\$0.00	\$49.93
3	70	\$26.85	\$10.18	\$16.73	\$0.00	\$53.76
4	80	\$30.69	\$10.18	\$16.73	\$0.00	\$57.60
5	90	\$34.52	\$10.18	\$16.73	\$0.00	\$61.43

Effective Date - 02/29/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.47	\$10.18	\$16.73	\$0.00	\$46.38
2	60	\$23.36	\$10.18	\$16.73	\$0.00	\$50.27
3	70	\$27.25	\$10.18	\$16.73	\$0.00	\$54.16
4	80	\$31.14	\$10.18	\$16.73	\$0.00	\$58.05
5	90	\$35.04	\$10.18	\$16.73	\$0.00	\$61.95

Notes:

Apprentice to Journeyworker Ratio:1:5

BULLDOZER/POWER SHOVEL/TREE SHREDDER /CLAM SHELL OPERATING	12/01/2015	\$32.97	\$10.18	\$11.74	\$0.00	\$54.89
<i>ENGINEERS LOCAL 98</i>						
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
CAISSON & UNDERPINNING BOTTOM MAN LABORERS - FOUNDATION AND MARINE	12/01/2015	\$36.95	\$7.30	\$13.40	\$0.00	\$57.65
	06/01/2016	\$37.70	\$7.30	\$13.40	\$0.00	\$58.40
	12/01/2016	\$38.70	\$7.30	\$13.40	\$0.00	\$59.40
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING LABORER LABORERS - FOUNDATION AND MARINE	12/01/2015	\$35.80	\$7.30	\$13.40	\$0.00	\$56.50
	06/01/2016	\$36.55	\$7.30	\$13.40	\$0.00	\$57.25
	12/01/2016	\$37.55	\$7.30	\$13.40	\$0.00	\$58.25
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING TOP MAN LABORERS - FOUNDATION AND MARINE	12/01/2015	\$35.80	\$7.30	\$13.40	\$0.00	\$56.50
	06/01/2016	\$36.55	\$7.30	\$13.40	\$0.00	\$57.25
	12/01/2016	\$37.55	\$7.30	\$13.40	\$0.00	\$58.25
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR LABORERS - ZONE 3 (BUILDING & SITE)	06/01/2015	\$29.00	\$7.30	\$11.58	\$0.00	\$47.88
	12/07/2015	\$29.68	\$7.30	\$11.58	\$0.00	\$48.56
	06/06/2016	\$30.37	\$7.30	\$11.58	\$0.00	\$49.25
	12/05/2016	\$31.05	\$7.30	\$11.58	\$0.00	\$49.93
For apprentice rates see "Apprentice- LABORER"						
CARPENTER CARPENTERS LOCAL 108 - HAMPDEN HAMPSHIRE	08/31/2015	\$32.39	\$8.55	\$14.38	\$0.00	\$55.32
	02/29/2016	\$33.14	\$8.55	\$14.38	\$0.00	\$56.07

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - CARPENTER - Local 108 Hampden Hampshire

Effective Date - 08/31/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$16.20	\$8.55	\$1.20	\$0.00	\$25.95
2	60	\$19.43	\$8.55	\$1.20	\$0.00	\$29.18
3	70	\$22.67	\$8.55	\$10.78	\$0.00	\$42.00
4	75	\$24.29	\$8.55	\$10.78	\$0.00	\$43.62
5	80	\$25.91	\$8.55	\$11.98	\$0.00	\$46.44
6	80	\$25.91	\$8.55	\$11.98	\$0.00	\$46.44
7	90	\$29.15	\$8.55	\$13.18	\$0.00	\$50.88
8	90	\$29.15	\$8.55	\$13.18	\$0.00	\$50.88

Effective Date - 02/29/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$16.57	\$8.55	\$1.20	\$0.00	\$26.32
2	60	\$19.88	\$8.55	\$1.20	\$0.00	\$29.63
3	70	\$23.20	\$8.55	\$10.78	\$0.00	\$42.53
4	75	\$24.86	\$8.55	\$10.78	\$0.00	\$44.19
5	80	\$26.51	\$8.55	\$11.98	\$0.00	\$47.04
6	80	\$26.51	\$8.55	\$11.98	\$0.00	\$47.04
7	90	\$29.83	\$8.55	\$13.18	\$0.00	\$51.56
8	90	\$29.83	\$8.55	\$13.18	\$0.00	\$51.56

Notes: Pre-6/09 Step1\$25.50/2\$27.11/3\$42.36/4\$45.60/5\$48.84/6\$50.46
 ** 1: 1-5/2: 6-8/3:9-11/Steps: 6 mos (600 hrs)/rates by step
 7\$52.08/8\$53.70

Apprentice to Journeyworker Ratio:**

CEMENT MASONRY/PLASTERING	07/01/2015	\$39.05	\$10.85	\$13.94	\$1.30	\$65.14
BRICKLAYERS LOCAL 3 (SPRINGFIELD/PITTSFIELD)	01/01/2016	\$39.62	\$10.85	\$13.94	\$1.30	\$65.71

Apprentice - CEMENT MASONRY/PLASTERING - Springfield/Pittsfield

Effective Date - 07/01/2015

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

Notes: Apprentice wages shall be no less than the following Steps;
 1\$46.02/2\$53.40/3\$56.69/4\$59.98/5\$63.28/6\$66.57/7\$72.15
 Steps 3,4 are 500 hrs. All other steps are 1,000 hrs.

Apprentice to Journeyworker Ratio:1:3

CHAIN SAW OPERATOR	06/01/2015	\$29.00	\$7.30	\$11.58	\$0.00	\$47.88
LABORERS - ZONE 3 (BUILDING & SITE)	12/07/2015	\$29.68	\$7.30	\$11.58	\$0.00	\$48.56
	06/06/2016	\$30.37	\$7.30	\$11.58	\$0.00	\$49.25
	12/05/2016	\$31.05	\$7.30	\$11.58	\$0.00	\$49.93

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
COMPRESSOR OPERATOR <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2015	\$32.44	\$10.18	\$11.74	\$0.00	\$54.36
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
CRANE OPERATOR <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2015	\$36.47	\$10.18	\$11.74	\$0.00	\$58.39
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DELEADER (BRIDGE) <i>PAINTERS LOCAL 35 - ZONE 3</i>	07/01/2015	\$48.56	\$7.85	\$16.10	\$0.00	\$72.51
	01/01/2016	\$49.51	\$7.85	\$16.10	\$0.00	\$73.46
	07/01/2016	\$50.46	\$7.85	\$16.10	\$0.00	\$74.41
	01/01/2017	\$51.41	\$7.85	\$16.10	\$0.00	\$75.36

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 07/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.28	\$7.85	\$0.00	\$0.00	\$32.13
2	55	\$26.71	\$7.85	\$3.66	\$0.00	\$38.22
3	60	\$29.14	\$7.85	\$3.99	\$0.00	\$40.98
4	65	\$31.56	\$7.85	\$4.32	\$0.00	\$43.73
5	70	\$33.99	\$7.85	\$14.11	\$0.00	\$55.95
6	75	\$36.42	\$7.85	\$14.44	\$0.00	\$58.71
7	80	\$38.85	\$7.85	\$14.77	\$0.00	\$61.47
8	90	\$43.70	\$7.85	\$15.44	\$0.00	\$66.99

Effective Date - 01/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.76	\$7.85	\$0.00	\$0.00	\$32.61
2	55	\$27.23	\$7.85	\$3.66	\$0.00	\$38.74
3	60	\$29.71	\$7.85	\$3.99	\$0.00	\$41.55
4	65	\$32.18	\$7.85	\$4.32	\$0.00	\$44.35
5	70	\$34.66	\$7.85	\$14.11	\$0.00	\$56.62
6	75	\$37.13	\$7.85	\$14.44	\$0.00	\$59.42
7	80	\$39.61	\$7.85	\$14.77	\$0.00	\$62.23
8	90	\$44.56	\$7.85	\$15.44	\$0.00	\$67.85

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

DEMO: ADZEMAN <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	12/01/2015	\$36.00	\$7.30	\$13.20	\$0.00	\$56.50
For apprentice rates see "Apprentice- LABORER"						
DEMO: BACKHOE/LOADER/HAMMER OPERATOR <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	12/01/2015	\$37.00	\$7.30	\$13.20	\$0.00	\$57.50
For apprentice rates see "Apprentice- LABORER"						
DEMO: BURNERS <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	12/01/2015	\$36.75	\$7.30	\$13.20	\$0.00	\$57.25
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DEMO: CONCRETE CUTTER/SAWYER <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	12/01/2015	\$37.00	\$7.30	\$13.20	\$0.00	\$57.50
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	12/01/2015	\$36.75	\$7.30	\$13.20	\$0.00	\$57.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	12/01/2015	\$36.00	\$7.30	\$13.20	\$0.00	\$56.50
For apprentice rates see "Apprentice- LABORER"						
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 3)</i>	08/01/2015	\$60.34	\$9.80	\$18.17	\$0.00	\$88.31
DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 3)</i>	08/01/2015	\$43.10	\$9.80	\$18.17	\$0.00	\$71.07
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 3)</i>	08/01/2015	\$64.65	\$9.80	\$18.17	\$0.00	\$92.62
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 3)</i>	08/01/2015	\$90.51	\$9.80	\$18.17	\$0.00	\$118.48
ELECTRICIAN (Including Core Drilling) <i>ELECTRICIANS LOCAL 7</i>	06/28/2015	\$38.06	\$9.20	\$9.79	\$0.00	\$57.05
	01/03/2016	\$38.91	\$9.20	\$9.79	\$0.00	\$57.90
	07/03/2016	\$39.81	\$9.20	\$9.79	\$0.00	\$58.80
	01/01/2017	\$40.71	\$9.20	\$9.79	\$0.00	\$59.70

Apprentice - ELECTRICIAN - Local 7

Effective Date - 06/28/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$15.22	\$5.00	\$0.46	\$0.00	\$20.68
2	45	\$17.13	\$5.00	\$0.46	\$0.00	\$22.59
3	50	\$19.03	\$9.20	\$5.51	\$0.00	\$33.74
4	55	\$20.93	\$9.20	\$5.51	\$0.00	\$35.64
5	65	\$24.74	\$9.20	\$6.51	\$0.00	\$40.45
6	70	\$26.64	\$9.20	\$7.51	\$0.00	\$43.35

Effective Date - 01/03/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$15.56	\$5.00	\$0.47	\$0.00	\$21.03
2	45	\$17.51	\$5.00	\$0.47	\$0.00	\$22.98
3	50	\$19.46	\$9.20	\$5.52	\$0.00	\$34.18
4	55	\$21.40	\$9.20	\$5.52	\$0.00	\$36.12
5	65	\$25.29	\$9.20	\$6.52	\$0.00	\$41.01
6	70	\$27.24	\$9.20	\$7.52	\$0.00	\$43.96

Notes: Pre-5/31/11 Begins at Step 3 \$37.78/4\$39.68/5\$44.10/6\$46.19
Steps 1-2 are 1000 hrs; Steps 3-6 are 1500 hrs.

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ELEVATOR CONSTRUCTOR <i>ELEVATOR CONSTRUCTORS LOCAL 41</i>	01/01/2015	\$47.73	\$13.58	\$14.21	\$0.00	\$75.52
	01/01/2016	\$48.77	\$14.43	\$14.96	\$0.00	\$78.16
	01/01/2017	\$49.90	\$15.28	\$15.71	\$0.00	\$80.89

Apprentice - ELEVATOR CONSTRUCTOR - Local 41

Effective Date - 01/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.87	\$13.58	\$14.21	\$0.00	\$51.66
2	55	\$26.25	\$13.58	\$14.21	\$0.00	\$54.04
3	65	\$31.02	\$13.58	\$14.21	\$0.00	\$58.81
4	70	\$33.41	\$13.58	\$14.21	\$0.00	\$61.20
5	80	\$38.18	\$13.58	\$14.21	\$0.00	\$65.97

Effective Date - 01/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.39	\$14.43	\$14.96	\$0.00	\$53.78
2	55	\$26.82	\$14.43	\$14.96	\$0.00	\$56.21
3	65	\$31.70	\$14.43	\$14.96	\$0.00	\$61.09
4	70	\$34.14	\$14.43	\$14.96	\$0.00	\$63.53
5	80	\$39.02	\$14.43	\$14.96	\$0.00	\$68.41

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>	01/01/2015	\$33.41	\$13.58	\$14.21	\$0.00	\$61.20
	01/01/2016	\$34.14	\$14.43	\$14.96	\$0.00	\$63.53
	01/01/2017	\$34.93	\$15.28	\$15.71	\$0.00	\$65.92

For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"

FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	12/01/2015	\$29.24	\$7.30	\$10.18	\$0.00	\$46.72
	06/01/2016	\$29.74	\$7.30	\$10.18	\$0.00	\$47.22
	12/01/2016	\$30.49	\$7.30	\$10.18	\$0.00	\$47.97

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
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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
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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
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FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 7</i>	06/28/2015	\$38.06	\$9.20	\$9.79	\$0.00	\$57.05
	01/03/2016	\$38.91	\$9.20	\$9.79	\$0.00	\$57.90
	07/03/2016	\$39.81	\$9.20	\$9.79	\$0.00	\$58.80
	01/01/2017	\$40.71	\$9.20	\$9.79	\$0.00	\$59.70

For apprentice rates see "Apprentice- ELECTRICIAN"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING <i>ELECTRICIANS</i>	06/28/2015	\$38.06	\$9.20	\$9.79	\$0.00	\$57.05
<i>LOCAL 7</i>	01/03/2016	\$38.91	\$9.20	\$9.79	\$0.00	\$57.90
	07/03/2016	\$39.81	\$9.20	\$9.79	\$0.00	\$58.80
	01/01/2017	\$40.71	\$9.20	\$9.79	\$0.00	\$59.70

For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"

FIREMAN <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2015	\$32.44	\$10.18	\$11.74	\$0.00	\$54.36
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Apprentice - OPERATING ENGINEERS - Local 98 Class 3

Effective Date - 12/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$19.46	\$10.18	\$11.74	\$0.00	\$41.38
2	70	\$22.71	\$10.18	\$11.74	\$0.00	\$44.63
3	80	\$25.95	\$10.18	\$11.74	\$0.00	\$47.87
4	90	\$29.20	\$10.18	\$11.74	\$0.00	\$51.12

Notes:

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

Apprentice to Journeyworker Ratio:1:6

FLAGGER & SIGNALER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	12/01/2015	\$20.50	\$7.30	\$10.18	\$0.00	\$37.98
	06/01/2016	\$20.50	\$7.30	\$10.18	\$0.00	\$37.98
	12/01/2016	\$20.50	\$7.30	\$10.18	\$0.00	\$37.98

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

FLOORCOVERER <i>FLOORCOVERERS LOCAL 2168 ZONE III</i>	09/01/2015	\$32.39	\$8.55	\$14.33	\$0.00	\$55.27
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Apprentice - FLOORCOVERER - Local 2168 Zone III

Effective Date - 09/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$16.20	\$8.55	\$1.20	\$0.00	\$25.95
2	55	\$17.81	\$8.55	\$1.20	\$0.00	\$27.56
3	60	\$19.43	\$8.55	\$10.73	\$0.00	\$38.71
4	65	\$21.05	\$8.55	\$10.73	\$0.00	\$40.33
5	70	\$22.67	\$8.55	\$11.93	\$0.00	\$43.15
6	75	\$24.29	\$8.55	\$11.93	\$0.00	\$44.77
7	80	\$25.91	\$8.55	\$13.13	\$0.00	\$47.59
8	85	\$27.53	\$8.55	\$13.13	\$0.00	\$49.21

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

FORK LIFT <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2015	\$32.66	\$10.18	\$11.74	\$0.00	\$54.58
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
GENERATORS/LIGHTING PLANTS <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2015	\$29.21	\$10.18	\$11.74	\$0.00	\$51.13
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) <i>GLAZIERS LOCAL 1333</i>	06/01/2015	\$35.08	\$10.25	\$8.00	\$0.00	\$53.33
	06/01/2016	\$35.58	\$10.70	\$8.25	\$0.00	\$54.53

Apprentice - GLAZIER - Local 1333

Effective Date - 06/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.54	\$10.25	\$1.00	\$0.00	\$28.79
2	56	\$19.73	\$10.25	\$1.00	\$0.00	\$30.98
3	63	\$21.93	\$10.25	\$1.50	\$0.00	\$33.68
4	69	\$24.12	\$10.25	\$1.50	\$0.00	\$35.87
5	75	\$26.31	\$10.25	\$2.00	\$0.00	\$38.56
6	81	\$28.50	\$10.25	\$2.00	\$0.00	\$40.75
7	88	\$30.70	\$10.25	\$8.00	\$0.00	\$48.95
8	94	\$32.89	\$10.25	\$8.00	\$0.00	\$51.14

Effective Date - 06/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.79	\$10.70	\$1.00	\$0.00	\$29.49
2	56	\$20.01	\$10.70	\$1.00	\$0.00	\$31.71
3	63	\$22.24	\$10.70	\$1.50	\$0.00	\$34.44
4	69	\$24.46	\$10.70	\$1.50	\$0.00	\$36.66
5	75	\$26.69	\$10.70	\$2.00	\$0.00	\$39.39
6	81	\$28.91	\$10.70	\$2.00	\$0.00	\$41.61
7	88	\$31.13	\$10.70	\$8.00	\$0.00	\$49.83
8	94	\$33.36	\$10.70	\$8.00	\$0.00	\$52.06

Notes:

Apprentice to Journeyworker Ratio:1:3

GRADER/TRENCHING MACHINE/DERRICK <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2015	\$32.97	\$10.18	\$11.74	\$0.00	\$54.89
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
HVAC (DUCTWORK) <i>SHEETMETAL WORKERS LOCAL 63</i>	07/01/2015	\$32.32	\$9.14	\$14.92	\$1.68	\$58.06
	01/01/2016	\$33.02	\$9.14	\$14.92	\$1.68	\$58.76
	07/01/2016	\$33.73	\$9.14	\$14.96	\$1.68	\$59.51
	01/01/2017	\$34.48	\$9.14	\$14.96	\$1.68	\$60.26
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (ELECTRICAL CONTROLS) <i>ELECTRICIANS LOCAL 7</i>	06/28/2015	\$38.06	\$9.20	\$9.79	\$0.00	\$57.05
	01/03/2016	\$38.91	\$9.20	\$9.79	\$0.00	\$57.90
	07/03/2016	\$39.81	\$9.20	\$9.79	\$0.00	\$58.80
	01/01/2017	\$40.71	\$9.20	\$9.79	\$0.00	\$59.70
For apprentice rates see "Apprentice- ELECTRICIAN"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HVAC (TESTING AND BALANCING - AIR) <i>SHEETMETAL WORKERS LOCAL 63</i>	07/01/2015	\$32.32	\$9.14	\$14.92	\$1.68	\$58.06
	01/01/2016	\$33.02	\$9.14	\$14.92	\$1.68	\$58.76
	07/01/2016	\$33.73	\$9.14	\$14.96	\$1.68	\$59.51
	01/01/2017	\$34.48	\$9.14	\$14.96	\$1.68	\$60.26
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING -WATER) <i>PLUMBERS & PIPEFITTERS LOCAL 104</i>	09/17/2015	\$37.56	\$8.30	\$14.90	\$0.00	\$60.76
	03/17/2016	\$38.56	\$8.30	\$14.90	\$0.00	\$61.76
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC <i>PLUMBERS & PIPEFITTERS LOCAL 104</i>	09/17/2015	\$37.56	\$8.30	\$14.90	\$0.00	\$60.76
	03/17/2016	\$38.56	\$8.30	\$14.90	\$0.00	\$61.76
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	12/01/2015	\$29.74	\$7.30	\$10.18	\$0.00	\$47.22
	06/01/2016	\$30.24	\$7.30	\$10.18	\$0.00	\$47.72
	12/01/2016	\$30.99	\$7.30	\$10.18	\$0.00	\$48.47
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
INSULATOR (PIPES & TANKS) <i>HEAT & FROST INSULATORS LOCAL 6 (SPRINGFIELD)</i>	09/01/2015	\$35.05	\$11.50	\$13.80	\$0.00	\$60.35
	09/01/2016	\$36.65	\$11.50	\$13.80	\$0.00	\$61.95
	09/01/2017	\$38.25	\$11.50	\$13.80	\$0.00	\$63.55
	09/01/2018	\$40.05	\$11.50	\$13.80	\$0.00	\$65.35
	09/01/2019	\$42.05	\$11.50	\$13.80	\$0.00	\$67.35

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

Effective Date - 09/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$17.53	\$11.50	\$10.05	\$0.00	\$39.08
2	60	\$21.03	\$11.50	\$10.80	\$0.00	\$43.33
3	70	\$24.54	\$11.50	\$11.55	\$0.00	\$47.59
4	80	\$28.04	\$11.50	\$12.30	\$0.00	\$51.84

Effective Date - 09/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$18.33	\$11.50	\$10.05	\$0.00	\$39.88
2	60	\$21.99	\$11.50	\$10.80	\$0.00	\$44.29
3	70	\$25.66	\$11.50	\$11.55	\$0.00	\$48.71
4	80	\$29.32	\$11.50	\$12.30	\$0.00	\$53.12

Notes:

Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

IRONWORKER/WELDER <i>IRONWORKERS LOCAL 7 (SPRINGFIELD AREA)</i>	09/16/2015	\$30.44	\$7.80	\$19.60	\$0.00	\$57.84
	03/16/2016	\$31.09	\$7.80	\$19.60	\$0.00	\$58.49
	09/16/2016	\$31.74	\$7.80	\$19.60	\$0.00	\$59.14
	03/16/2017	\$32.39	\$7.80	\$19.60	\$0.00	\$59.79

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - IRONWORKER - Local 7 Springfield

Effective Date - 09/16/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$18.26	\$7.80	\$19.60	\$0.00	\$45.66
2	70	\$21.31	\$7.80	\$19.60	\$0.00	\$48.71
3	75	\$22.83	\$7.80	\$19.60	\$0.00	\$50.23
4	80	\$24.35	\$7.80	\$19.60	\$0.00	\$51.75
5	85	\$25.87	\$7.80	\$19.60	\$0.00	\$53.27
6	90	\$27.40	\$7.80	\$19.60	\$0.00	\$54.80

Effective Date - 03/16/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$18.65	\$7.80	\$19.60	\$0.00	\$46.05
2	70	\$21.76	\$7.80	\$19.60	\$0.00	\$49.16
3	75	\$23.32	\$7.80	\$19.60	\$0.00	\$50.72
4	80	\$24.87	\$7.80	\$19.60	\$0.00	\$52.27
5	85	\$26.43	\$7.80	\$19.60	\$0.00	\$53.83
6	90	\$27.98	\$7.80	\$19.60	\$0.00	\$55.38

Notes:

Structural 1:6; Ornamental 1:4

Apprentice to Journeyworker Ratio:

JACKHAMMER & PAVING BREAKER OPERATOR LABORERS - ZONE 3 (BUILDING & SITE)	06/01/2015	\$29.00	\$7.30	\$11.58	\$0.00	\$47.88
	12/07/2015	\$29.68	\$7.30	\$11.58	\$0.00	\$48.56
	06/06/2016	\$30.37	\$7.30	\$11.58	\$0.00	\$49.25
	12/05/2016	\$31.05	\$7.30	\$11.58	\$0.00	\$49.93

For apprentice rates see "Apprentice- LABORER"

LABORER LABORERS - ZONE 3 (BUILDING & SITE)	06/01/2015	\$28.75	\$7.30	\$11.58	\$0.00	\$47.63
	12/07/2015	\$29.43	\$7.30	\$11.58	\$0.00	\$48.31
	06/06/2016	\$30.12	\$7.30	\$11.58	\$0.00	\$49.00
	12/05/2016	\$30.80	\$7.30	\$11.58	\$0.00	\$49.68

Apprentice - LABORER - Zone 3 Building & Site

Effective Date - 06/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$17.25	\$7.30	\$11.58	\$0.00	\$36.13
2	70	\$20.13	\$7.30	\$11.58	\$0.00	\$39.01
3	80	\$23.00	\$7.30	\$11.58	\$0.00	\$41.88
4	90	\$25.88	\$7.30	\$11.58	\$0.00	\$44.76

Effective Date - 12/07/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$17.66	\$7.30	\$11.58	\$0.00	\$36.54
2	70	\$20.60	\$7.30	\$11.58	\$0.00	\$39.48
3	80	\$23.54	\$7.30	\$11.58	\$0.00	\$42.42
4	90	\$26.49	\$7.30	\$11.58	\$0.00	\$45.37

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER (HEAVY & HIGHWAY)	12/01/2015	\$28.99	\$7.30	\$10.18	\$0.00	\$46.47
LABORERS - ZONE 3 (HEAVY & HIGHWAY)	06/01/2016	\$29.49	\$7.30	\$10.18	\$0.00	\$46.97
	12/01/2016	\$30.24	\$7.30	\$10.18	\$0.00	\$47.72

Apprentice - LABORER (Heavy & Highway) - Zone 3

Effective Date - 12/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$17.39	\$7.30	\$10.18	\$0.00	\$34.87
2	70	\$20.29	\$7.30	\$10.18	\$0.00	\$37.77
3	80	\$23.19	\$7.30	\$10.18	\$0.00	\$40.67
4	90	\$26.09	\$7.30	\$10.18	\$0.00	\$43.57

Effective Date - 06/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$17.69	\$7.30	\$10.18	\$0.00	\$35.17
2	70	\$20.64	\$7.30	\$10.18	\$0.00	\$38.12
3	80	\$23.59	\$7.30	\$10.18	\$0.00	\$41.07
4	90	\$26.54	\$7.30	\$10.18	\$0.00	\$44.02

Notes:

Apprentice to Journeyworker Ratio:1:5

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: CARPENTER TENDER <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2015	\$28.75	\$7.30	\$11.58	\$0.00	\$47.63
	12/07/2015	\$29.43	\$7.30	\$11.58	\$0.00	\$48.31
	06/06/2016	\$30.12	\$7.30	\$11.58	\$0.00	\$49.00
	12/05/2016	\$30.80	\$7.30	\$11.58	\$0.00	\$49.68
For apprentice rates see "Apprentice- LABORER"						
LABORER: CEMENT FINISHER TENDER <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2015	\$29.00	\$7.30	\$11.58	\$0.00	\$47.88
	12/07/2015	\$29.68	\$7.30	\$11.58	\$0.00	\$48.56
	06/06/2016	\$30.37	\$7.30	\$11.58	\$0.00	\$49.25
	12/05/2016	\$31.05	\$7.30	\$11.58	\$0.00	\$49.93
For apprentice rates see "Apprentice- LABORER"						
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2015	\$28.85	\$7.30	\$11.58	\$0.00	\$47.73
	12/07/2015	\$29.53	\$7.30	\$11.58	\$0.00	\$48.41
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2015	\$29.75	\$7.30	\$11.58	\$0.00	\$48.63
	12/07/2015	\$30.43	\$7.30	\$11.58	\$0.00	\$49.31
	06/06/2016	\$31.12	\$7.30	\$11.58	\$0.00	\$50.00
	12/05/2016	\$31.80	\$7.30	\$11.58	\$0.00	\$50.68
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	12/01/2015	\$29.24	\$7.30	\$10.18	\$0.00	\$46.72
	06/01/2016	\$29.74	\$7.30	\$10.18	\$0.00	\$47.22
	12/01/2016	\$30.49	\$7.30	\$10.18	\$0.00	\$47.97
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
LABORER: MULTI-TRADE TENDER <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2015	\$28.75	\$7.30	\$11.58	\$0.00	\$47.63
	12/07/2015	\$29.43	\$7.30	\$11.58	\$0.00	\$48.31
	06/06/2016	\$30.12	\$7.30	\$11.58	\$0.00	\$49.00
	12/05/2016	\$30.80	\$7.30	\$11.58	\$0.00	\$49.68
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2015	\$28.75	\$7.30	\$11.58	\$0.00	\$47.63
	12/07/2015	\$29.43	\$7.30	\$11.58	\$0.00	\$48.31
	06/06/2016	\$30.12	\$7.30	\$11.58	\$0.00	\$49.00
	12/05/2016	\$30.80	\$7.30	\$11.58	\$0.00	\$49.68
This classification applies to all tree work associated with the removal of standing trees, and trimming and removal of branches and limbs when the work is not done for a utility company for the purpose of operation, maintenance or repair of utility company equipment. For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2015	\$29.00	\$7.30	\$11.58	\$0.00	\$47.88
	12/07/2015	\$29.68	\$7.30	\$11.58	\$0.00	\$48.56
	06/06/2016	\$30.37	\$7.30	\$11.58	\$0.00	\$49.25
	12/05/2016	\$31.05	\$7.30	\$11.58	\$0.00	\$49.93
For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	12/01/2015	\$29.24	\$7.30	\$10.18	\$0.00	\$46.72
	06/01/2016	\$29.74	\$7.30	\$10.18	\$0.00	\$47.22
	12/01/2016	\$30.49	\$7.30	\$10.18	\$0.00	\$47.97
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
MARBLE & TILE FINISHERS <i>BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE</i>	08/31/2015	\$31.76	\$10.18	\$16.41	\$0.00	\$58.35
	02/29/2016	\$32.33	\$10.18	\$16.41	\$0.00	\$58.92
	09/05/2016	\$33.24	\$10.18	\$16.48	\$0.00	\$59.90
	02/27/2017	\$33.81	\$10.18	\$16.48	\$0.00	\$60.47

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

Effective Date - 08/31/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$15.88	\$10.18	\$16.41	\$0.00	\$42.47
2	60	\$19.06	\$10.18	\$16.41	\$0.00	\$45.65
3	70	\$22.23	\$10.18	\$16.41	\$0.00	\$48.82
4	80	\$25.41	\$10.18	\$16.41	\$0.00	\$52.00
5	90	\$28.58	\$10.18	\$16.41	\$0.00	\$55.17

Effective Date - 02/29/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$16.17	\$10.18	\$16.41	\$0.00	\$42.76
2	60	\$19.40	\$10.18	\$16.41	\$0.00	\$45.99
3	70	\$22.63	\$10.18	\$16.41	\$0.00	\$49.22
4	80	\$25.86	\$10.18	\$16.41	\$0.00	\$52.45
5	90	\$29.10	\$10.18	\$16.41	\$0.00	\$55.69

Notes:

Apprentice to Journeyworker Ratio:1:5

MARBLE MASONS, TILELAYERS & TERRAZZO MECH	08/31/2015	\$38.36	\$10.18	\$16.73	\$0.00	\$65.27
BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE	02/29/2016	\$38.93	\$10.18	\$16.73	\$0.00	\$65.84
	09/05/2016	\$39.83	\$10.18	\$16.81	\$0.00	\$66.82
	02/27/2017	\$40.40	\$10.18	\$16.81	\$0.00	\$67.39

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 08/31/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.18	\$10.18	\$16.73	\$0.00	\$46.09
2	60	\$23.02	\$10.18	\$16.73	\$0.00	\$49.93
3	70	\$26.85	\$10.18	\$16.73	\$0.00	\$53.76
4	80	\$30.69	\$10.18	\$16.73	\$0.00	\$57.60
5	90	\$34.52	\$10.18	\$16.73	\$0.00	\$61.43

Effective Date - 02/29/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.47	\$10.18	\$16.73	\$0.00	\$46.38
2	60	\$23.36	\$10.18	\$16.73	\$0.00	\$50.27
3	70	\$27.25	\$10.18	\$16.73	\$0.00	\$54.16
4	80	\$31.14	\$10.18	\$16.73	\$0.00	\$58.05
5	90	\$35.04	\$10.18	\$16.73	\$0.00	\$61.95

Notes:

Apprentice to Journeyworker Ratio:1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES) OPERATING ENGINEERS LOCAL 98	12/01/2015	\$32.97	\$10.18	\$11.74	\$0.00	\$54.89
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MECHANIC/WELDER/BOOM TRUCK OPERATING ENGINEERS LOCAL 98	12/01/2015	\$32.44	\$10.18	\$11.74	\$0.00	\$54.36
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MILLWRIGHT (Zone 3) MILLWRIGHTS LOCAL 1121 - Zone 3	04/01/2015	\$33.13	\$9.80	\$16.21	\$0.00	\$59.14
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Apprentice - MILLWRIGHT - Local 1121 Zone 3

Effective Date - 04/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$18.22	\$9.80	\$4.48	\$0.00	\$32.50
2	65	\$21.53	\$9.80	\$13.36	\$0.00	\$44.69
3	75	\$24.85	\$9.80	\$14.18	\$0.00	\$48.83
4	85	\$28.16	\$9.80	\$14.99	\$0.00	\$52.95

Notes:

Steps are 2,000 hours

Apprentice to Journeyworker Ratio:1:5

MORTAR MIXER LABORERS - ZONE 3 (BUILDING & SITE)	06/01/2015	\$29.00	\$7.30	\$11.58	\$0.00	\$47.88
	12/07/2015	\$29.68	\$7.30	\$11.58	\$0.00	\$48.56
	06/06/2016	\$30.37	\$7.30	\$11.58	\$0.00	\$49.25
	12/05/2016	\$31.05	\$7.30	\$11.58	\$0.00	\$49.93

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- LABORER"						
OILER <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2015	\$28.13	\$10.18	\$11.74	\$0.00	\$50.05
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS VI <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2015	\$26.15	\$10.18	\$11.74	\$0.00	\$48.07
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS) <i>PAINTERS LOCAL 35 - ZONE 3</i>	07/01/2015	\$48.56	\$7.85	\$16.10	\$0.00	\$72.51
	01/01/2016	\$49.51	\$7.85	\$16.10	\$0.00	\$73.46
	07/01/2016	\$50.46	\$7.85	\$16.10	\$0.00	\$74.41
	01/01/2017	\$51.41	\$7.85	\$16.10	\$0.00	\$75.36

Apprentice - PAINTER Local 35 - BRIDGES/TANKS

Effective Date - 07/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.28	\$7.85	\$0.00	\$0.00	\$32.13
2	55	\$26.71	\$7.85	\$3.66	\$0.00	\$38.22
3	60	\$29.14	\$7.85	\$3.99	\$0.00	\$40.98
4	65	\$31.56	\$7.85	\$4.32	\$0.00	\$43.73
5	70	\$33.99	\$7.85	\$14.11	\$0.00	\$55.95
6	75	\$36.42	\$7.85	\$14.44	\$0.00	\$58.71
7	80	\$38.85	\$7.85	\$14.77	\$0.00	\$61.47
8	90	\$43.70	\$7.85	\$15.44	\$0.00	\$66.99

Effective Date - 01/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.76	\$7.85	\$0.00	\$0.00	\$32.61
2	55	\$27.23	\$7.85	\$3.66	\$0.00	\$38.74
3	60	\$29.71	\$7.85	\$3.99	\$0.00	\$41.55
4	65	\$32.18	\$7.85	\$4.32	\$0.00	\$44.35
5	70	\$34.66	\$7.85	\$14.11	\$0.00	\$56.62
6	75	\$37.13	\$7.85	\$14.44	\$0.00	\$59.42
7	80	\$39.61	\$7.85	\$14.77	\$0.00	\$62.23
8	90	\$44.56	\$7.85	\$15.44	\$0.00	\$67.85

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	07/01/2015	\$32.03	\$7.85	\$12.30	\$0.00	\$52.18
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. <i>PAINTERS LOCAL 35 - ZONE 3</i>	01/01/2016	\$32.93	\$7.85	\$12.30	\$0.00	\$53.08
	07/01/2016	\$33.78	\$7.85	\$12.30	\$0.00	\$53.93
	01/01/2017	\$34.68	\$7.85	\$12.30	\$0.00	\$54.83

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

Effective Date - 07/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$16.02	\$7.85	\$0.00	\$0.00	\$23.87
2	55	\$17.62	\$7.85	\$1.57	\$0.00	\$27.04
3	60	\$19.22	\$7.85	\$1.71	\$0.00	\$28.78
4	65	\$20.82	\$7.85	\$1.85	\$0.00	\$30.52
5	70	\$22.42	\$7.85	\$11.45	\$0.00	\$41.72
6	75	\$24.02	\$7.85	\$11.59	\$0.00	\$43.46
7	80	\$25.62	\$7.85	\$11.73	\$0.00	\$45.20
8	90	\$28.83	\$7.85	\$12.02	\$0.00	\$48.70

Effective Date - 01/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$16.47	\$7.85	\$0.00	\$0.00	\$24.32
2	55	\$18.11	\$7.85	\$1.57	\$0.00	\$27.53
3	60	\$19.76	\$7.85	\$1.71	\$0.00	\$29.32
4	65	\$21.40	\$7.85	\$1.85	\$0.00	\$31.10
5	70	\$23.05	\$7.85	\$11.45	\$0.00	\$42.35
6	75	\$24.70	\$7.85	\$11.59	\$0.00	\$44.14
7	80	\$26.34	\$7.85	\$11.73	\$0.00	\$45.92
8	90	\$29.64	\$7.85	\$12.02	\$0.00	\$49.51

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT)	07/01/2015	\$29.35	\$7.85	\$12.30	\$0.00	\$49.50
PAINTERS LOCAL 35 - ZONE 3	01/01/2016	\$30.25	\$7.85	\$12.30	\$0.00	\$50.40
	07/01/2016	\$31.11	\$7.85	\$12.30	\$0.00	\$51.26
	01/01/2017	\$32.00	\$7.85	\$12.30	\$0.00	\$52.15

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

Effective Date - 07/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$14.68	\$7.85	\$0.00	\$0.00	\$22.53
2	55	\$16.14	\$7.85	\$1.57	\$0.00	\$25.56
3	60	\$17.61	\$7.85	\$1.71	\$0.00	\$27.17
4	65	\$19.08	\$7.85	\$1.85	\$0.00	\$28.78
5	70	\$20.55	\$7.85	\$11.45	\$0.00	\$39.85
6	75	\$22.01	\$7.85	\$11.59	\$0.00	\$41.45
7	80	\$23.48	\$7.85	\$11.73	\$0.00	\$43.06
8	90	\$26.42	\$7.85	\$12.02	\$0.00	\$46.29

Effective Date - 01/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$15.13	\$7.85	\$0.00	\$0.00	\$22.98
2	55	\$16.64	\$7.85	\$1.57	\$0.00	\$26.06
3	60	\$18.15	\$7.85	\$1.71	\$0.00	\$27.71
4	65	\$19.66	\$7.85	\$1.85	\$0.00	\$29.36
5	70	\$21.18	\$7.85	\$11.45	\$0.00	\$40.48
6	75	\$22.69	\$7.85	\$11.59	\$0.00	\$42.13
7	80	\$24.20	\$7.85	\$11.73	\$0.00	\$43.78
8	90	\$27.23	\$7.85	\$12.02	\$0.00	\$47.10

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, NEW) *	07/01/2015	\$30.63	\$7.85	\$12.30	\$0.00	\$50.78
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 3	01/01/2016	\$31.53	\$7.85	\$12.30	\$0.00	\$51.68
	07/01/2016	\$32.38	\$7.85	\$12.30	\$0.00	\$52.53
	01/01/2017	\$33.28	\$7.85	\$12.30	\$0.00	\$53.43

Apprentice - PAINTER - Local 35 Zone 3 - BRUSH NEW

Effective Date - 07/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$15.32	\$7.85	\$0.00	\$0.00	\$23.17
2	55	\$16.85	\$7.85	\$1.57	\$0.00	\$26.27
3	60	\$18.38	\$7.85	\$1.71	\$0.00	\$27.94
4	65	\$19.91	\$7.85	\$1.85	\$0.00	\$29.61
5	70	\$21.44	\$7.85	\$11.45	\$0.00	\$40.74
6	75	\$22.97	\$7.85	\$11.59	\$0.00	\$42.41
7	80	\$24.50	\$7.85	\$11.73	\$0.00	\$44.08
8	90	\$27.57	\$7.85	\$12.02	\$0.00	\$47.44

Effective Date - 01/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$15.77	\$7.85	\$0.00	\$0.00	\$23.62
2	55	\$17.34	\$7.85	\$1.57	\$0.00	\$26.76
3	60	\$18.92	\$7.85	\$1.71	\$0.00	\$28.48
4	65	\$20.49	\$7.85	\$1.85	\$0.00	\$30.19
5	70	\$22.07	\$7.85	\$11.45	\$0.00	\$41.37
6	75	\$23.65	\$7.85	\$11.59	\$0.00	\$43.09
7	80	\$25.22	\$7.85	\$11.73	\$0.00	\$44.80
8	90	\$28.38	\$7.85	\$12.02	\$0.00	\$48.25

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER / TAPER (BRUSH, REPAINT)	07/01/2015	\$27.95	\$7.85	\$12.30	\$0.00	\$48.10
PAINTERS LOCAL 35 - ZONE 3	01/01/2016	\$28.85	\$7.85	\$12.30	\$0.00	\$49.00
	07/01/2016	\$29.70	\$7.85	\$12.30	\$0.00	\$49.85
	01/01/2017	\$30.60	\$7.85	\$12.30	\$0.00	\$50.75

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - PAINTER Local 35 Zone 3 - BRUSH REPAINT

Effective Date - 07/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$13.98	\$7.85	\$0.00	\$0.00	\$21.83
2	55	\$15.37	\$7.85	\$1.57	\$0.00	\$24.79
3	60	\$16.77	\$7.85	\$1.71	\$0.00	\$26.33
4	65	\$18.17	\$7.85	\$1.85	\$0.00	\$27.87
5	70	\$19.57	\$7.85	\$11.45	\$0.00	\$38.87
6	75	\$20.96	\$7.85	\$11.59	\$0.00	\$40.40
7	80	\$22.36	\$7.85	\$11.73	\$0.00	\$41.94
8	90	\$25.16	\$7.85	\$12.02	\$0.00	\$45.03

Effective Date - 01/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$14.43	\$7.85	\$0.00	\$0.00	\$22.28
2	55	\$15.87	\$7.85	\$1.57	\$0.00	\$25.29
3	60	\$17.31	\$7.85	\$1.71	\$0.00	\$26.87
4	65	\$18.75	\$7.85	\$1.85	\$0.00	\$28.45
5	70	\$20.20	\$7.85	\$11.45	\$0.00	\$39.50
6	75	\$21.64	\$7.85	\$11.59	\$0.00	\$41.08
7	80	\$23.08	\$7.85	\$11.73	\$0.00	\$42.66
8	90	\$25.97	\$7.85	\$12.02	\$0.00	\$45.84

Notes:

Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY) LABORERS - ZONE 3 (HEAVY & HIGHWAY)	12/01/2015	\$28.99	\$7.30	\$10.18	\$0.00	\$46.47
	06/01/2016	\$29.49	\$7.30	\$10.18	\$0.00	\$46.97
	12/01/2016	\$30.24	\$7.30	\$10.18	\$0.00	\$47.72

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

PANEL & PICKUP TRUCKS DRIVER TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	12/01/2012	\$30.28	\$9.07	\$8.00	\$0.00	\$47.35
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) PILE DRIVER LOCAL 56 (ZONE 3)	08/31/2015	\$39.00	\$9.80	\$18.17	\$0.00	\$66.97
PILE DRIVER PILE DRIVER LOCAL 56 (ZONE 3)	08/31/2015	\$39.00	\$9.80	\$18.17	\$0.00	\$66.97

Apprentice - PILE DRIVER - Local 56 Zone 3

Effective Date - 08/31/2015

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

Notes: Apprentice wages shall be no less than the following Steps;
 (Same as set in Zone 1)
 1\$50.05/2\$54.25/3\$58.46/4\$60.56/5\$62.66/6\$62.66/7\$66.87/8\$66.87

Apprentice to Journeyworker Ratio:1:3

PIPELAYER <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2015	\$29.00	\$7.30	\$11.58	\$0.00	\$47.88
	12/07/2015	\$29.68	\$7.30	\$11.58	\$0.00	\$48.56
	06/06/2016	\$30.37	\$7.30	\$11.58	\$0.00	\$49.25
	12/05/2016	\$31.05	\$7.30	\$11.58	\$0.00	\$49.93

For apprentice rates see "Apprentice- LABORER"

PIPELAYER (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	12/01/2015	\$29.24	\$7.30	\$10.18	\$0.00	\$46.72
	06/01/2016	\$29.74	\$7.30	\$10.18	\$0.00	\$47.22
	12/01/2016	\$30.49	\$7.30	\$10.18	\$0.00	\$47.97

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

PLUMBER & PIPEFITTER <i>PLUMBERS & PIPEFITTERS LOCAL 104</i>	09/17/2015	\$37.56	\$8.30	\$14.90	\$0.00	\$60.76
	03/17/2016	\$38.56	\$8.30	\$14.90	\$0.00	\$61.76

Apprentice - PLUMBER/PIPEFITTER - Local 104

Effective Date - 09/17/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$16.90	\$8.30	\$8.90	\$0.00	\$34.10
2	50	\$18.78	\$8.30	\$8.90	\$0.00	\$35.98
3	60	\$22.54	\$8.30	\$8.90	\$0.00	\$39.74
4	70	\$26.29	\$8.30	\$8.90	\$0.00	\$43.49
5	80	\$30.05	\$8.30	\$14.90	\$0.00	\$53.25

Effective Date - 03/17/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$17.35	\$8.30	\$8.90	\$0.00	\$34.55
2	50	\$19.28	\$8.30	\$8.90	\$0.00	\$36.48
3	60	\$23.14	\$8.30	\$8.90	\$0.00	\$40.34
4	70	\$26.99	\$8.30	\$8.90	\$0.00	\$44.19
5	80	\$30.85	\$8.30	\$14.90	\$0.00	\$54.05

Notes:
 Steps are 2000 hrs.

Apprentice to Journeyworker Ratio:1:5

PNEUMATIC CONTROLS (TEMP.) <i>PLUMBERS & PIPEFITTERS LOCAL 104</i>	09/17/2015	\$37.56	\$8.30	\$14.90	\$0.00	\$60.76
	03/17/2016	\$38.56	\$8.30	\$14.90	\$0.00	\$61.76

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

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY)	12/01/2015	\$29.24	\$7.30	\$10.18	\$0.00	\$46.72
<i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	06/01/2016	\$29.74	\$7.30	\$10.18	\$0.00	\$47.22
	12/01/2016	\$30.49	\$7.30	\$10.18	\$0.00	\$47.97
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
POWDERMAN & BLASTER	06/01/2015	\$29.75	\$7.30	\$11.58	\$0.00	\$48.63
<i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	12/07/2015	\$30.43	\$7.30	\$11.58	\$0.00	\$49.31
	06/06/2016	\$31.12	\$7.30	\$11.58	\$0.00	\$50.00
	12/05/2016	\$31.80	\$7.30	\$11.58	\$0.00	\$50.68
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER (HEAVY & HIGHWAY)	12/01/2015	\$29.99	\$7.30	\$10.18	\$0.00	\$47.47
<i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	06/01/2016	\$30.49	\$7.30	\$10.18	\$0.00	\$47.97
	12/01/2016	\$31.24	\$7.30	\$10.18	\$0.00	\$48.72
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)						
PUMP OPERATOR (CONCRETE)	12/01/2015	\$32.97	\$10.18	\$11.74	\$0.00	\$54.89
<i>OPERATING ENGINEERS LOCAL 98</i>						
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER)	12/01/2015	\$32.44	\$10.18	\$11.74	\$0.00	\$54.36
<i>OPERATING ENGINEERS LOCAL 98</i>						
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER	05/01/2015	\$20.78	\$9.92	\$9.09	\$0.00	\$39.79
<i>TEAMSTERS LOCAL 404</i>	05/01/2016	\$21.01	\$10.23	\$9.40	\$0.00	\$40.64
RESIDENTIAL WOOD FRAME CARPENTER **	08/31/2015	\$26.06	\$7.20	\$5.35	\$0.00	\$38.61
** The Residential Wood Frame Carpenter classification applies only to the construction of new, wood frame residences that do not exceed four stories including the basement. <i>CARPENTERS LOCAL 108 - HAMPDEN HAMPSHIRE</i>	02/29/2016	\$26.81	\$7.20	\$5.35	\$0.00	\$39.36
As of 9/1/09 Carpentry work on wood-frame residential WEATHERIZATION projects shall be paid the RESIDENTIAL WOOD FRAME CARPENTER rate.						

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - CARPENTER (Residential Wood Frame) - 108 Hampden Hampshire

Effective Date - 08/31/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$15.64	\$7.20	\$0.00	\$0.00	\$22.84
2	60	\$15.64	\$7.20	\$5.35	\$0.00	\$28.19
3	65	\$16.94	\$7.20	\$5.35	\$0.00	\$29.49
4	70	\$18.24	\$7.20	\$5.35	\$0.00	\$30.79
5	75	\$19.55	\$7.20	\$5.35	\$0.00	\$32.10
6	80	\$20.85	\$7.20	\$5.35	\$0.00	\$33.40
7	85	\$22.15	\$7.20	\$5.35	\$0.00	\$34.70
8	90	\$23.45	\$7.20	\$5.35	\$0.00	\$36.00

Effective Date - 02/29/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$16.09	\$7.20	\$0.00	\$0.00	\$23.29
2	60	\$16.09	\$7.20	\$5.35	\$0.00	\$28.64
3	65	\$17.43	\$7.20	\$5.35	\$0.00	\$29.98
4	70	\$18.77	\$7.20	\$5.35	\$0.00	\$31.32
5	75	\$20.11	\$7.20	\$5.35	\$0.00	\$32.66
6	80	\$21.45	\$7.20	\$5.35	\$0.00	\$34.00
7	85	\$22.79	\$7.20	\$5.35	\$0.00	\$35.34
8	90	\$24.13	\$7.20	\$5.35	\$0.00	\$36.68

Notes:

** 1: 1-5, 2: 6-8, 3: 9-11

Apprentice to Journeyworker Ratio:**

RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2015	\$29.00	\$7.30	\$11.58	\$0.00	\$47.88
	12/07/2015	\$29.68	\$7.30	\$11.58	\$0.00	\$48.56
	06/06/2016	\$30.37	\$7.30	\$11.58	\$0.00	\$49.25
	12/05/2016	\$31.05	\$7.30	\$11.58	\$0.00	\$49.93

For apprentice rates see "Apprentice- LABORER"

ROLLER OPERATOR <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2015	\$31.83	\$10.18	\$11.74	\$0.00	\$53.75
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

ROOFER (Coal tar pitch) <i>ROOFERS LOCAL 248</i>	07/16/2015	\$29.75	\$9.00	\$13.25	\$0.00	\$52.00
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For apprentice rates see "Apprentice- ROOFER"

ROOFER (Inc.Roofing Waterproofing &Roofing Damproofg) <i>ROOFERS LOCAL 248</i>	07/16/2015	\$29.25	\$9.00	\$12.75	\$0.00	\$51.00
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Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - ROOFER - Local 248

Effective Date - 07/16/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$17.55	\$9.00	\$0.00	\$0.00	\$26.55
2	65	\$19.01	\$9.00	\$12.75	\$0.00	\$40.76
3	70	\$20.48	\$9.00	\$12.75	\$0.00	\$42.23
4	75	\$21.94	\$9.00	\$12.75	\$0.00	\$43.69
5	80	\$23.40	\$9.00	\$12.75	\$0.00	\$45.15
6	85	\$24.86	\$9.00	\$12.75	\$0.00	\$46.61
7	90	\$26.33	\$9.00	\$12.75	\$0.00	\$48.08
8	95	\$27.79	\$9.00	\$12.75	\$0.00	\$49.54

Notes:

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

Apprentice to Journeyworker Ratio:1:3

ROOFER SLATE / TILE / PRECAST CONCRETE ROOFERS LOCAL 248	07/16/2015	\$29.75	\$9.00	\$13.25	\$0.00	\$52.00
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For apprentice rates see "Apprentice- ROOFER"

SCRAPER OPERATING ENGINEERS LOCAL 98	12/01/2015	\$32.44	\$10.18	\$11.74	\$0.00	\$54.36
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

SELF-POWERED ROLLERS AND COMPACTORS (TAMPERS) OPERATING ENGINEERS LOCAL 98	12/01/2015	\$31.83	\$10.18	\$11.74	\$0.00	\$53.75
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

SELF-PROPELLED POWER BROOM OPERATING ENGINEERS LOCAL 98	12/01/2015	\$29.21	\$10.18	\$11.74	\$0.00	\$51.13
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For apprentice rates see "Apprentice- OPERATING ENGINEERS"

SHEETMETAL WORKER SHEETMETAL WORKERS LOCAL 63	07/01/2015	\$32.32	\$9.14	\$14.92	\$1.68	\$58.06
	01/01/2016	\$33.02	\$9.14	\$14.92	\$1.68	\$58.76
	07/01/2016	\$33.73	\$9.14	\$14.96	\$1.68	\$59.51
	01/01/2017	\$34.48	\$9.14	\$14.96	\$1.68	\$60.26

Apprentice - SHEET METAL WORKER - Local 63

Effective Date - 07/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$14.54	\$5.88	\$4.08	\$0.00	\$24.50
2	50	\$16.16	\$6.18	\$4.53	\$0.00	\$26.87
3	55	\$17.78	\$6.47	\$8.15	\$0.97	\$33.37
4	60	\$19.39	\$6.77	\$8.15	\$1.03	\$35.34
5	65	\$21.01	\$7.06	\$8.15	\$1.09	\$37.31
6	70	\$22.62	\$7.36	\$8.15	\$1.14	\$39.27
7	75	\$24.24	\$7.66	\$8.15	\$1.20	\$41.25
8	80	\$25.86	\$7.95	\$13.88	\$1.43	\$49.12
9	85	\$27.47	\$8.25	\$14.01	\$1.49	\$51.22
10	90	\$29.09	\$8.55	\$14.01	\$1.55	\$53.20

Effective Date - 01/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$14.86	\$5.88	\$4.08	\$0.00	\$24.82
2	50	\$16.51	\$6.18	\$4.53	\$0.00	\$27.22
3	55	\$18.16	\$6.47	\$8.15	\$0.97	\$33.75
4	60	\$19.81	\$6.77	\$8.15	\$1.03	\$35.76
5	65	\$21.46	\$7.06	\$8.15	\$1.09	\$37.76
6	70	\$23.11	\$7.36	\$8.15	\$1.14	\$39.76
7	75	\$24.77	\$7.66	\$8.15	\$1.20	\$41.78
8	80	\$26.42	\$7.95	\$13.88	\$1.43	\$49.68
9	85	\$28.07	\$8.25	\$14.01	\$1.49	\$51.82
10	90	\$29.72	\$8.55	\$14.01	\$1.55	\$53.83

Notes:

Apprentice to Journeyworker Ratio:1:3

SIGN ERECTOR PAINTERS LOCAL 35 - ZONE 3	06/01/2013	\$25.81	\$7.07	\$7.05	\$0.00	\$39.93
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Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - SIGN ERECTOR - Local 35 Zone 3

Effective Date - 06/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$12.91	\$7.07	\$0.00	\$0.00	\$19.98
2	55	\$14.20	\$7.07	\$2.45	\$0.00	\$23.72
3	60	\$15.49	\$7.07	\$2.45	\$0.00	\$25.01
4	65	\$16.78	\$7.07	\$2.45	\$0.00	\$26.30
5	70	\$18.07	\$7.07	\$7.05	\$0.00	\$32.19
6	75	\$19.36	\$7.07	\$7.05	\$0.00	\$33.48
7	80	\$20.65	\$7.07	\$7.05	\$0.00	\$34.77
8	85	\$21.94	\$7.07	\$7.05	\$0.00	\$36.06
9	90	\$23.23	\$7.07	\$7.05	\$0.00	\$37.35

Notes:
Steps are 4 mos.

Apprentice to Journeyworker Ratio:1:1

SPECIALIZED EARTH MOVING EQUIP < 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2015	\$31.94	\$10.41	\$10.08	\$0.00	\$52.43
	06/01/2016	\$32.44	\$10.41	\$10.08	\$0.00	\$52.93
	08/01/2016	\$32.44	\$10.91	\$10.08	\$0.00	\$53.43
	12/01/2016	\$32.44	\$10.91	\$10.89	\$0.00	\$54.24
SPECIALIZED EARTH MOVING EQUIP > 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2015	\$32.23	\$10.41	\$10.08	\$0.00	\$52.72
	06/01/2016	\$32.73	\$10.41	\$10.08	\$0.00	\$53.22
	08/01/2016	\$32.73	\$10.91	\$10.08	\$0.00	\$53.72
	12/01/2016	\$32.73	\$10.91	\$10.89	\$0.00	\$54.53
SPRINKLER FITTER <i>SPRINKLER FITTERS LOCAL 669</i>	04/01/2015	\$38.01	\$8.52	\$11.98	\$0.00	\$58.51
	01/01/2016	\$38.01	\$8.52	\$12.13	\$0.00	\$58.66

Apprentice - SPRINKLER FITTER - Local 669

Effective Date - 04/01/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$17.10	\$7.45	\$0.00	\$0.00	\$24.55
2	50	\$19.01	\$7.45	\$0.00	\$0.00	\$26.46
3	55	\$20.91	\$8.52	\$6.15	\$0.00	\$35.58
4	60	\$22.81	\$8.52	\$6.15	\$0.00	\$37.48
5	65	\$24.71	\$8.52	\$6.40	\$0.00	\$39.63
6	70	\$26.61	\$8.52	\$6.40	\$0.00	\$41.53
7	75	\$28.51	\$8.52	\$6.40	\$0.00	\$43.43
8	80	\$30.41	\$8.52	\$6.40	\$0.00	\$45.33
9	85	\$32.31	\$8.52	\$6.40	\$0.00	\$47.23
10	90	\$34.21	\$8.52	\$6.40	\$0.00	\$49.13

Effective Date - 01/01/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	45	\$17.10	\$7.45	\$0.00	\$0.00	\$24.55
2	50	\$19.01	\$7.45	\$0.00	\$0.00	\$26.46
3	55	\$20.91	\$8.52	\$6.30	\$0.00	\$35.73
4	60	\$22.81	\$8.52	\$6.30	\$0.00	\$37.63
5	65	\$24.71	\$8.52	\$6.55	\$0.00	\$39.78
6	70	\$26.61	\$8.52	\$6.55	\$0.00	\$41.68
7	75	\$28.51	\$8.52	\$6.55	\$0.00	\$43.58
8	80	\$30.41	\$8.52	\$6.55	\$0.00	\$45.48
9	85	\$32.31	\$8.52	\$6.55	\$0.00	\$47.38
10	90	\$34.21	\$8.52	\$6.55	\$0.00	\$49.28

Notes:

Apprentice to Journeyworker Ratio:1:1

TELECOMMUNICATION TECHNICIAN	06/28/2015	\$38.06	\$9.20	\$9.79	\$0.00	\$57.05
ELECTRICIANS LOCAL 7	01/03/2016	\$38.91	\$9.20	\$9.79	\$0.00	\$57.90
	07/03/2016	\$39.81	\$9.20	\$9.79	\$0.00	\$58.80
	01/01/2017	\$40.71	\$9.20	\$9.79	\$0.00	\$59.70

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - TELECOMMUNICATION TECHNICIAN - Local 7

Effective Date - 06/28/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$15.22	\$5.00	\$0.46	\$0.00	\$20.68
2	45	\$17.13	\$5.00	\$0.46	\$0.00	\$22.59
3	50	\$19.03	\$9.20	\$5.51	\$0.00	\$33.74
4	55	\$20.93	\$9.20	\$5.51	\$0.00	\$35.64
5	65	\$24.74	\$9.20	\$6.51	\$0.00	\$40.45
6	70	\$26.64	\$9.20	\$7.51	\$0.00	\$43.35

Effective Date - 01/03/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$15.56	\$5.00	\$0.47	\$0.00	\$21.03
2	45	\$17.51	\$5.00	\$0.47	\$0.00	\$22.98
3	50	\$19.46	\$9.20	\$5.52	\$0.00	\$34.18
4	55	\$21.40	\$9.20	\$5.52	\$0.00	\$36.12
5	65	\$25.29	\$9.20	\$6.52	\$0.00	\$41.01
6	70	\$27.24	\$9.20	\$7.52	\$0.00	\$43.96

Notes:

Steps are 800 hours

Apprentice to Journeyworker Ratio:1:1

TERRAZZO FINISHERS	08/31/2015	\$31.76	\$10.18	\$16.41	\$0.00	\$58.35
BRICKLAYERS LOCAL 3 (SPR/PITT) - MARBLE & TILE	02/29/2016	\$32.33	\$10.18	\$16.41	\$0.00	\$58.92
	09/05/2016	\$33.24	\$10.18	\$16.48	\$0.00	\$59.90
	02/27/2017	\$33.81	\$10.18	\$16.48	\$0.00	\$60.47

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

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

Effective Date - 08/31/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$15.88	\$10.18	\$16.41	\$0.00	\$42.47
2	60	\$19.06	\$10.18	\$16.41	\$0.00	\$45.65
3	70	\$22.23	\$10.18	\$16.41	\$0.00	\$48.82
4	80	\$25.41	\$10.18	\$16.41	\$0.00	\$52.00
5	90	\$28.58	\$10.18	\$16.41	\$0.00	\$55.17

Effective Date - 02/29/2016

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$16.17	\$10.18	\$16.41	\$0.00	\$42.76
2	60	\$19.40	\$10.18	\$16.41	\$0.00	\$45.99
3	70	\$22.63	\$10.18	\$16.41	\$0.00	\$49.22
4	80	\$25.86	\$10.18	\$16.41	\$0.00	\$52.45
5	90	\$29.10	\$10.18	\$16.41	\$0.00	\$55.69

Notes:

Apprentice to Journeyworker Ratio:1:5

TEST BORING DRILLER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2015	\$37.20	\$7.30	\$13.40	\$0.00	\$57.90
	06/01/2016	\$37.95	\$7.30	\$13.40	\$0.00	\$58.65
	12/01/2016	\$38.95	\$7.30	\$13.40	\$0.00	\$59.65
For apprentice rates see "Apprentice- LABORER"						
TEST BORING DRILLER HELPER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2015	\$35.92	\$7.30	\$13.40	\$0.00	\$56.62
	06/01/2016	\$36.67	\$7.30	\$13.40	\$0.00	\$57.37
	12/01/2016	\$37.67	\$7.30	\$13.40	\$0.00	\$58.37
For apprentice rates see "Apprentice- LABORER"						
TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	12/01/2015	\$35.80	\$7.30	\$13.40	\$0.00	\$56.50
	06/01/2016	\$36.55	\$7.30	\$13.40	\$0.00	\$57.25
	12/01/2016	\$37.55	\$7.30	\$13.40	\$0.00	\$58.25
For apprentice rates see "Apprentice- LABORER"						
TRACTORS <i>OPERATING ENGINEERS LOCAL 98</i>	12/01/2015	\$31.83	\$10.18	\$11.74	\$0.00	\$53.75
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2015	\$32.52	\$10.41	\$10.08	\$0.00	\$53.01
	06/01/2016	\$33.02	\$10.41	\$10.08	\$0.00	\$53.51
	08/01/2016	\$33.02	\$10.91	\$10.08	\$0.00	\$54.01
	12/01/2016	\$33.02	\$10.91	\$10.89	\$0.00	\$54.82
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	12/01/2015	\$48.08	\$7.30	\$13.80	\$0.00	\$69.18
	06/01/2016	\$48.83	\$7.30	\$13.80	\$0.00	\$69.93
	12/01/2016	\$49.83	\$7.30	\$13.80	\$0.00	\$70.93
For apprentice rates see "Apprentice- LABORER"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	12/01/2015	\$50.08	\$7.30	\$13.80	\$0.00	\$71.18
	06/01/2016	\$50.83	\$7.30	\$13.80	\$0.00	\$71.93
	12/01/2016	\$51.83	\$7.30	\$13.80	\$0.00	\$72.93
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2015	\$40.15	\$7.30	\$13.80	\$0.00	\$61.25
	06/01/2016	\$40.90	\$7.30	\$13.80	\$0.00	\$62.00
	12/01/2016	\$41.90	\$7.30	\$13.80	\$0.00	\$63.00
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	12/01/2015	\$42.15	\$7.30	\$13.80	\$0.00	\$63.25
	06/01/2016	\$42.90	\$7.30	\$13.80	\$0.00	\$64.00
	12/01/2016	\$43.90	\$7.30	\$13.80	\$0.00	\$65.00
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE B</i>	12/01/2015	\$31.94	\$10.41	\$10.08	\$0.00	\$52.43
	06/01/2016	\$32.44	\$10.41	\$10.08	\$0.00	\$52.93
	08/01/2016	\$32.44	\$10.91	\$10.08	\$0.00	\$53.43
	12/01/2016	\$32.44	\$10.91	\$10.89	\$0.00	\$54.24
WAGON DRILL OPERATOR <i>LABORERS - ZONE 3 (BUILDING & SITE)</i>	06/01/2015	\$29.00	\$7.30	\$11.58	\$0.00	\$47.88
	12/07/2015	\$29.68	\$7.30	\$11.58	\$0.00	\$48.56
	06/06/2016	\$30.37	\$7.30	\$11.58	\$0.00	\$49.25
	12/05/2016	\$31.05	\$7.30	\$11.58	\$0.00	\$49.93
For apprentice rates see "Apprentice- LABORER"						
WAGON DRILL OPERATOR (HEAVY & HIGHWAY) <i>LABORERS - ZONE 3 (HEAVY & HIGHWAY)</i>	12/01/2015	\$29.24	\$7.30	\$10.18	\$0.00	\$46.72
	06/01/2016	\$29.74	\$7.30	\$10.18	\$0.00	\$47.22
	12/01/2016	\$30.49	\$7.30	\$10.18	\$0.00	\$47.97
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"						
WATER METER INSTALLER <i>PLUMBERS & PIPEFITTERS LOCAL 104</i>	06/17/2015	\$37.56	\$8.30	\$14.90	\$0.00	\$60.76
	03/17/2016	\$38.56	\$8.30	\$14.90	\$0.00	\$61.76
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
Outside Electrical - West						
EQUIPMENT OPERATOR <i>OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42</i>	08/30/2015	\$42.16	\$8.20	\$9.26	\$0.00	\$59.62
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42</i>	08/30/2015	\$28.87	\$8.20	\$8.87	\$0.00	\$45.94
For apprentice rates see "Apprentice- LINEMAN"						
GROUNDMAN / TRUCK DRIVER <i>OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42</i>	08/30/2015	\$37.73	\$8.20	\$9.13	\$0.00	\$55.06
For apprentice rates see "Apprentice- LINEMAN"						
HEAVY EQUIPMENT OPERATOR <i>OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42</i>	08/30/2015	\$44.37	\$8.20	\$9.33	\$0.00	\$61.90
For apprentice rates see "Apprentice- LINEMAN"						
JOURNEYMAN LINEMAN <i>OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42</i>	08/30/2015	\$48.80	\$8.20	\$9.46	\$0.00	\$66.46

Classification

Effective Date Base Wage Health Pension Supplemental Unemployment Total Rate

Apprentice - LINEMAN (Outside Electrical) - West Local 42

Effective Date - 08/30/2015

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$29.28	\$8.20	\$0.88	\$0.00	\$38.36
2	65	\$31.72	\$8.20	\$0.95	\$0.00	\$40.87
3	70	\$34.16	\$8.20	\$9.02	\$0.00	\$51.38
4	75	\$36.60	\$8.20	\$9.10	\$0.00	\$53.90
5	80	\$39.04	\$8.20	\$9.17	\$0.00	\$56.41
6	85	\$41.48	\$8.20	\$9.24	\$0.00	\$58.92
7	90	\$43.92	\$8.20	\$9.32	\$0.00	\$61.44

Notes:

Apprentice to Journeyworker Ratio:1:2

TELEDATA CABLE SPLICER <i>OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42</i>	01/01/2015	\$28.12	\$4.25	\$3.09	\$0.00	\$35.46
	01/01/2016	\$28.98	\$4.25	\$3.12	\$0.00	\$36.35
TELEDATA LINEMAN/EQUIPMENT OPERATOR <i>OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42</i>	01/01/2015	\$26.49	\$4.25	\$3.04	\$0.00	\$33.78
	01/01/2016	\$27.31	\$4.25	\$3.07	\$0.00	\$34.63
TELEDATA WIREMAN/INSTALLER/TECHNICIAN <i>OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42</i>	01/01/2015	\$26.49	\$4.25	\$3.04	\$0.00	\$33.78
	01/01/2016	\$27.31	\$4.25	\$3.07	\$0.00	\$34.63
TRACTOR-TRAILER DRIVER <i>OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42</i>	08/30/2015	\$42.16	\$8.20	\$9.26	\$0.00	\$59.62
TREE TRIMMER <i>OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42</i>	02/01/2015	\$18.05	\$3.55	\$0.00	\$0.00	\$21.60
	01/31/2016	\$18.51	\$3.55	\$0.00	\$0.00	\$22.06
This classification applies only to tree work done: (a) for a utility company, R.E.A. cooperative, or railroad or coal mining company, and (b) for the purpose of operating, maintaining, or repairing the utility company's equipment, and (c) by a person who is using hand or mechanical cutting methods and is not on the ground. This classification does not apply to wholesale tree removal.						
TREE TRIMMER GROUNDMAN <i>OUTSIDE ELECTRICAL WORKERS - WEST LOCAL 42</i>	02/01/2015	\$15.92	\$3.55	\$0.00	\$0.00	\$19.47
	01/31/2016	\$16.32	\$3.55	\$0.00	\$0.00	\$19.87
This classification applies only to tree work done: (a) for a utility company, R.E.A. cooperative, or railroad or coal mining company, and (b) for the purpose of operating, maintaining, or repairing the utility company's equipment, and (c) by a person who is using hand or mechanical cutting methods and is on the ground. This classification does not apply to wholesale tree removal.						

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.

SECTION 01300
SUBMITTALS - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

1. RELATED DOCUMENTS

- A.** This Section supplements Subparagraphs 4.6.3 and 5.3.5 and Paragraphs 4.7, 4.8, and 4.15 of the General Conditions.
- B.** Consult the individual sections of the specifications for the specific submittals required under those sections and for further details and descriptions of the requirements.

2. GENERAL PROCEDURES FOR SUBMITTALS

- A.** Timeliness - The Contractor shall transmit each submittal to the Prime Designer sufficiently in advance of performing related Work or other applicable activities so that the installation is not delayed by processing times, including disapproval and resubmittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery, and similar sequenced activities. No extension of time will be authorized because of the Contractor's failure to transmit submittals to the Prime Designer in advance of the Work.
- B.** Sequence - The Contractor shall transmit each submittal in a sequence which will not result in the Prime Designer's approval having to be later modified or rescinded by reason of subsequent submittals which should have been processed earlier or concurrently for coordination.
- C.** Contractor's Review and Approval - Only submittals received from and bearing the stamp of approval of the Contractor will be considered for review by the Prime Designer. Submittals shall be accompanied by a transmittal notice stating name of Project, date of submittal, "To", "From" (Contractor, Subcontractor, Installer, Manufacturer, Supplier), Specification Section, or Drawing No. to which the submittal refers, purpose (first submittal, resubmittal), description, remarks, distribution record, and signature of transmitter.
- D.** Prime Designer's Action - The Prime Designer will review the Contractor's submittals and return them with one of the following actions recorded thereon by appropriate markings:
 - (1.)**Final Unrestricted Release: Where marked "No Exception Taken" the Work covered by the submittal may proceed provided it complies with the requirements of the Contract Documents.
 - (2.)**Final-But-Restricted Release: When marked "Exceptions As Noted – Do Not Resubmit" the Work may proceed provided it complies with the Prime Designer's notations or corrections on the submittal and complies with the

requirements of the Contract Documents. Acceptance of the Work will depend on these compliances.

(3.)Returned for Resubmittal: When marked "Exceptions As Noted - Resubmit" or "Rejected" the Work covered by the submittal (such as purchasing, fabrication, delivery, or other activity) should not proceed. The submittal should be revised or a new submittal resubmitted without delay, in accordance with the Prime Designer's notations stating the reasons for returning the submittal.

E. Processing - All costs for printing, preparing, packaging, submitting, resubmitting, and mailing, or delivering submittals required by this contract shall be included in the Contract Sum.

3. OR EQUALS

A. Definition - Whenever a specification section names one or more brands for a given item, and the Contractor wishes to submit, for consideration, another brand, the submission shall be considered an "or-equal" or a "material substitution". For the purposes of this Contract, the terms "or-equal" and "material substitution" shall be considered synonymous.

B. In no case may an item be furnished on the Work other than the item named or described, unless the Prime Designer, with the Administrator's written concurrence, shall consider the item equal to the Item so named or described, as provided by M.G.L. c.30 § 39M.

C. The equality of items offered as "equal" to items named or described shall be proved to the satisfaction of the Prime Designer at the expense of the Contractor submitting the substitution.

D. The Prime Designer and/or the Department may require that full size samples of both the specified and proposed products be submitted for review and evaluation. The Contractor shall bear full cost for providing, delivering, and disposal of all such samples.

E. The Contractor shall assume full responsibility for the performance of any item submitted as an "Or-Equal" and assume the costs of any changes in any Work that may be caused by such substitution.

F. Or Equal Approval Process - on the transmittal or on a separate sheet attached to the submission, the Contractor shall direct attention to any deviations, including minor limitations and variations, from the Contract Documents.

(1.)The Contractor shall submit to the Prime Designer for consideration of any or-equal substitution a written point-by-point comparison containing the name and full particulars of the proposed product and the product named or described in the Contract Documents.

(2.)Such submittal shall in no event be made later than 120 calendar days prior to the incorporation of the item into the Work. In any case in which the time

period specified in the Contract Documents from the Notice to Proceed to Substantial Completion is less than 120 days, this requirement can be waived by the Prime Designer.

- (3.) Upon receipt of a written request for approval of an or-equal substitution, the Prime Designer shall investigate whether the proposed item shall be considered equal to the item named or described in the Contract Documents. Upon conclusion of the investigation, the Prime Designer shall promptly advise the Contractor that the item is, or is not, considered acceptable as on Or-Equal substitution. Such written notice must have the concurrence of the Administrator.

4. SUBMISSION OF PRODUCT DATA

- A.** The Contractor shall submit 7 copies of Product Data to the Prime Designer. All such data shall be specific and identification of material or equipment submitted shall be clearly marked in ink. Data of general nature will not be accepted.
- B.** Product Data shall be accompanied by a transmittal notice. The Contractor's stamp of approval shall appear on the printed information itself, in a location which will not impair legibility.
- C.** Product Data returned by the Prime Designer as "Disapproved" shall be resubmitted in 7 copies until the Prime Designers approval is obtained.
- D.** When the Product Data are acceptable, the Prime Designer will stamp them "Approved" or "Approved as Corrected", retain 3 copies, and return 4 copies to the Contractor. The Contractor shall provide and distribute additional copies as may be required to complete the Work.
- E.** The Contractor shall maintain one full set of approved, original, Product Data at the site.

5. SUBMISSION OF SHOP DRAWINGS

- A.** Shop Drawings shall be complete, giving all information necessary or requested in the individual section of the specifications. They shall also show adjoining Work and details of connection thereto.
- B.** Shop Drawings shall be for whole systems. Partial submissions will not be accepted.
- C.** The Prime Designer reserves the right to review and approve shop drawings only after approval of related product data and samples.
- D.** Shop drawings shall be properly identified and contain the name of the project, name of the firm submitting the shop drawings, shop drawing number, date of shop drawings and revisions, Contractor's stamp of approval, and sufficient spaces near the title block for the Prime Designer's stamp.

- E.** The Contractor shall submit to the Prime Designer one legible, reproducible transparency and two black line prints of each shop drawing. Transparency and prints shall be mailed or delivered in roll form. Each submittal shall be accompanied by a transmittal notice.
- F.** When the Prime Designer returns a transparency with the stamp "Revise and Resubmit" or "Disapproved", the Contractor shall correct the original drawing or prepare a new drawing and resubmit a transparency and two prints thereof to the Prime Designer for approval. This procedure shall be repeated until the Prime Designer's approval is obtained.
- G.** When the Prime Designer returns a transparency with the stamp "Approved" or "Approved as Corrected", the Contractor shall provide and distribute the prints for all Contractor and Subcontractors use, and in addition submit, within 10 calendar days after approval, 4 prints to the Prime Designer.
- H.** The Contractor shall maintain one full set of approved shop drawings at the site.

6. SUBMISSION OF SAMPLES

- A.** Unless otherwise specified in the individual section, the Contractor shall submit two specimens of each sample.
- B.** Samples shall be of adequate size to permit proper evaluation of materials. Where variations in color or in other characteristics are to be expected, samples shall show the maximum range of variation. Materials exceeding the variation of approved samples will not be approved on the Work.
- C.** Samples of items of interior finishes shall be submitted all at once to permit a coordinated selection of colors and finishes.
- D.** Samples that can be conveniently mailed shall be sent directly to the Prime Designer, accompanied by a transmittal notice. All transmittals shall be stamped with the Contractor's approval stamp of the material submitted.
- E.** All other samples shall be delivered at the field office of the Project Representative with sample identification tag attached and properly filled in. Transmittal notice of samples so delivered with the Contractor's stamp of approval shall be mailed to the Prime Designer.
- F.** If a sample is rejected by the Prime Designer, a new sample shall be resubmitted in the specified manner. This procedure shall be repeated until the Prime Designer approves the sample
- G.** Samples will not be returned unless return is requested at the time of submission. The right is reserved to require submission of samples whether or not particular mention is made in the specifications, at no additional cost to the Owner.

END OF SECTION

**SECTION 01500
TEMPORARY FACILITIES**

1. GENERAL REQUIREMENTS

- A.** The Contractor shall be responsible for providing and maintaining all temporary facilities until Substantial Completion. Removal of such prior to Substantial Completion must be with the concurrence of the Prime Designer. The Contractor bears full responsibility for re-providing any facility removed prior to Substantial Completion
- B.** Removal of all temporary facilities shall be a condition precedent to Substantial Completion unless directed otherwise by the Prime Designer or specifically noted in the specifications.
- C.** The Contractor must comply with all safety laws and regulations of the Commonwealth of Massachusetts, the United States Government, and local government agencies applicable to Work under this contract. The Contractor's attention is directed to the Commonwealth of Massachusetts, Department of Labor and Industries Regulation 454 CMR.

2. FIELD OFFICES

- A.** The Owner will designate an area in the existing building that shall serve as the Contractor's field office. The Owner will also designate two parking spaces on site for the Contractor's use.
- B.** The offices shall be set in a location approved by the Owner, and shall be maintained by the Contractor in a clean and orderly condition.

3. TEMPORARY TELEPHONES

- A.** The Contractor shall provide a separate service for the use of the Contractor's authorized personnel and Subcontractors.
- B.** The Contractor shall pay for the installation and removal of the foregoing temporary telephones and for all calls and charges in connection therewith.

4. TEMPORARY TOILETS

- A.** The Contractor shall provide and service an adequate number of toilet booths with chemical type toilets.
- B.** The toilets shall be erected in a location approved by the Prime Designer and shall be maintained by the Contractor in a clean and orderly condition in compliance with all local and state health requirements.

5. TEMPORARY CONSTRUCTION FENCE

- A. The Contractor shall be responsible for providing and maintaining temporary fencing or barricades around the construction as may be necessary to assure the safety of all persons authorized or unauthorized. Such protective measures shall be located and constructed as required by local, state, and federal ordinances, laws, codes, or regulations.

6. TEMPORARY STRUCTURES AND MATERIAL HANDLING

- A. The Contractor shall provide such storage sheds, temporary buildings, or trailers as required for the performance of the Contract. Subcontractors shall provide their own temporary buildings and trailers.
- B. Materials shall be handled, stored, installed, cleaned, and protected in accordance with the best practice in the industry and, except where otherwise specified in the Contract Documents, in accordance with manufacturer's specifications and directions.

7. TEMPORARY STAGING, STAIRS, CHUTES

- A. Except as otherwise specified, the Contractor shall furnish, install, maintain in safe condition, and remove all scaffolds, staging, and planking over 8 ft. in height, as required for the use of all trades for proper execution of the Work.
- B. The Contractor shall furnish, install, maintain in safe condition, and remove all temporary ramps, stairs, ladders, and similar items as required for the use of all trades for the proper execution of the Work.
- C. Permanent stairs shall be erected as soon as possible, for which the Contractor shall provide temporary protective treads, risers, handrails, and shaft protection.
- D. The Contractor shall furnish, install, maintain, and remove covered chutes from openings in the exterior walls of upper floors. Such shall be in convenient locations and permit disposal of rubbish directly into trucks or disposal units.
- E. Debris shall not be allowed to fall freely from upper levels of the building. Materials shall not be dropped from open windows.

8. HOISTING FACILITIES

- A. Except as otherwise specified, the Contractor shall provide, operate, and remove material hoists, cranes, and other hoisting as required for the performance of the Work by all trades. All such hoisting service shall be without cost to the Subcontractors.

9. TEMPORARY USE OF ELEVATOR

- A. Not applicable.

10. TEMPORARY WATER

- A. The Contractor will be permitted to use the existing water sources in the building during construction.

11. TEMPORARY ELECTRICITY

- A. The Contractor will be permitted to use the Owner's existing power as long as there are no interruptions to the Owner's daily operations. The Contractor will be responsible for accessing the power.
- B. At no expense to the Owner, any temporary configuration of the existing power will need to be restored to its original condition at the end of construction.

12. WEATHER PROTECTION

- A. The Contractor shall provide temporary enclosures and heat to permit work to be carried on during the months of November through March in compliance with MGL c.149 §44G (d). These specifications are not to be construed as requiring enclosures or heat for operations that are not economically feasible in the opinion of the Owner. Without limitation this includes such items as excavation, pile driving, steel erection, erection of certain exterior wall panels, roofing, and similar operations.
- B. "Weather Protection" means the temporary protection of that Work adversely affected by moisture, wind, and cold by covering, enclosing, and/or heating. This protection shall provide adequate working areas during the months of November through March as determined by the Owner and consistent with the construction schedule to permit the continuous progress of all Work necessary to maintain an orderly and efficient sequence of construction operations. The Contractor shall furnish and install "Weather Protection" material and be responsible for all costs, including heating required to maintain a minimum of 40 degrees F. at the working surface. This provision does not supersede any specific requirements for methods of construction, curing of materials, or the applicable conditions set forth in the Contract Documents with added regard to performance obligations of the Contractor.
- C. Within 30 calendar days after award of the Contract, the Contractor shall submit in writing, to the Prime Designer for approval, three (3) copies of the proposed methods for "Weather Protection".
- D. The Contractor shall assume the entire responsibility for weather protection during construction (until Substantial Completion), and shall be liable for any damage to any Work caused by failure to supply proper weather protection and proper ventilation.
- E. Work damaged by frost shall be removed and replaced by and at the Contractor's expense and as directed by the Prime Designer.
- F. It is to be specifically understood that the Contractor shall do no work under any conditions deemed unsuitable by the Contractor to the execution of the

Work. This provision shall not constitute any waiver, release, or lessening of the Contractor's obligation to bring the Work to Substantial Completion within the period of time set forth in the Contract Documents.

12. TEMPORARY HEAT

- A.** The Contractor shall provide a minimum temperature of 70 degrees Fahrenheit to all occupied areas of the Project. If the permanent heating system cannot be utilized or if work requires a shutdown of the existing system the Contractor shall make arrangements, acceptable to the Owner, to comply with this requirement.
- B.** The Contractor may, with the approval of the Owner, elect to utilize the permanent heating system for temporary heat. This may be allowed after the building is enclosed and after the heating system has been tested and is ready to operate and providing the Contractor complies with all provisions stated elsewhere in the Contract Documents and the following:
 - (1.)** The Contractor shall pay the costs of all fuel and electricity required for temporary heating until Substantial Completion.
- C.** Installation of weather protection and heating devices shall comply with all safety regulations including provisions for adequate ventilation and fire protection devices.
- D.** The Contractor shall provide thermometers at places designated by the Prime Designer in order to determine if specified temperatures are being maintained.
- E.** Unit heaters, if used, shall be of the smokeless type and be installed and operated in such a way that finished work will not be damaged. "Salamanders" shall not be used.

END OF SECTION

**SECTION 01510
PROTECTION**

1. PROTECTION OF PERSONS & PROPERTIES

- A.** The site will be occupied during construction. The Contractor shall take all necessary precautions to ensure the public safety and convenience of the occupants during construction.
- B.** Any damage to buildings, roads, (public and private), bituminous concrete areas, fences, lawn areas, trees, shrubbery, poles, underground utilities, etc. shall be made good by and at the Contractor's own expense, all to the satisfaction of the Owner.
- C.** The Contractor shall patch, repair and/or replace all adjacent materials and surfaces damaged after the installation of new work at no expense to the Owner. All repair and replacement work shall match the existing in kind and appearance.

2. TEMPORARY PROTECTION

- A.** The Contractor shall:
 - (1.)** Protect excavations, trenches, buildings, and materials at all times from rain water, ground water, backing-up, or leakage of sewers, drains, or other piping, or from water damage of any origin. Provide all pumps, piping, coverings, and other materials and equipment as required by job conditions to accomplish this requirement.
 - (2.)** In addition to the weather protection during the months of November to March specified elsewhere, provide temporary watertight enclosures for openings in exterior walls and in roof decks when and as required to protect the Work from damage by inclement weather. Temporary enclosures shall be provided with adequate means of ventilation to prevent accumulation of moisture in the buildings.
 - (3.)** Provide temporary wood doors for exterior entrances and elsewhere as required. Permanent door enclosures shall not be used as temporary enclosures.
 - (4.)** Protect sills, jambs, and heads of openings through which materials are handled.
 - (5.)** Protect decks and slabs to receive work by other trades from any soiling which will prevent proper adhesion of subsequent Work. Decks and slabs shall be left clean and free of blemishes at the time other trades begin the application of their work.

- (6.) Protect concrete slabs to remain exposed and finished floors against mechanical damage, plaster droppings, oil, grease, paint, or other material which will stain the floor finish. Install and maintain adequate strips of building paper or other protection on finished floors in rooms where other trades will do future Work.
 - (7.) Protect all surfaces to receive work by other trades from any soiling which will prevent proper execution of subsequent work
 - (8.) Protect other areas, furniture, and private property of the Owner. Any areas damaged by the Contractor shall be restored to the original condition or compensated at the Contractor's expense.
- B.** Roof surfaces and waterproofed surfaces shall not be subjected to traffic nor shall they be used for storage of materials. Where some activity must take place in order to carry out the Work, adequate protection must be provided.
- C.** After the installation of the Work by any Subcontractor is completed, the Contractor shall be responsible for its protection and for repairing, replacing, or cleaning any such Work which has been damaged by other trades or by any other cause, so that all Work is in first class condition at the time of Substantial Completion.

3. ACCESS

The Contractor shall, at all times, leave an unobstructed way along walks and roadways, and shall maintain barriers and lights for the protection of all persons and property in all locations where materials are stored or work is in progress.

4. SECURITY

- A.** The Contractor shall be responsible for providing all security precautions necessary to protect the Contractor's and Owner's interests.
- B.** Where excavation is involved, the Contractor shall be responsible for providing continuous watchmen service as necessary, to insure adequate protection of the general public.

5. NOISE AND DUST CONTROL

- A.** The Contractor shall take special measures to protect the residents, neighbors, and general public from noise, dust, and other disturbances by:

 - (1.) Keeping common pedestrian and vehicular circulation areas clean and unobstructed;
 - (2.) Insulating work area from occupied portions as far as possible; and

(3.) Sealing dust and fumes from contaminating occupied spaces.

6. FIRE PROTECTION

- A. The Contractor shall take necessary precautions to insure against fire during construction. The Contractor shall be responsible to insure that the area within contract limits is kept orderly and clean and that combustible rubbish and construction debris is promptly removed from the site.
- B. Installation of equipment suitable for fire protection shall be done as soon as possible after commencement of the Work. The Contractor's attention is directed to the requirements of the Commonwealth of Massachusetts, Department of Labor and Workforce Development Regulation 454 CMR.

7. WIND PROTECTION

Should high wind warnings be issued by the U.S. Weather Bureau, the Contractor shall take every precaution to minimize danger to persons, to the Work, and to the adjacent property.

8. WEATHER PROTECTION

The Contractor shall provide Weather Protection as required by Specification Section 01500 Temporary Facilities and any other specific requirements of the Contract Documents.

END OF SECTION

**SECTION 01520
CLEANING UP**

1. RELATED DOCUMENTS

- A.** This section supplements Article 4.17 of the General Conditions.
- B.** Consult the individual sections of the specifications for cleaning of Work installed under those sections.

2. CLEANING DURING CONSTRUCTION

- A.** Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
 - 1.** Do not burn or bury rubbish and waste materials on the site.
 - 2.** Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
 - 3.** Do not dispose of wastes into streams or waterways.
- B.** Wet down dry materials and rubbish to lay dust and prevent blowing dust.
- C.** Do not allow materials and rubbish to drop free or be thrown from upper floors, but remove by use of a material hoist or rubbish chutes.
- D.** Maintain the Site free from accumulations of waste, debris, and rubbish.
- E.** Provide on-site containers for collection of waste materials and rubbish.
- F.** At the end of each day, remove and legally dispose waste materials and rubbish from site.
- G.** Vacuum clean interior building areas when ready to receive finish painting, and continue vacuum cleaning on an as-needed basis until Substantial Completion.
- H.** Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly painted surfaces.
- I.** Disposal of materials shall be in compliance with all applicable laws, ordinances, codes, and by-laws.

3. FINAL CLEANING

- A.** Prior to submitting a request to the Prime Designer to certify Substantial Completion of the Work, the Contractor shall inspect all interior and exterior spaces and verify that all waste materials, rubbish, tools, equipment, machinery, and surplus materials have been removed, and that all sight-exposed surfaces are clean. Leave the Project clean and ready for occupancy.
- B.** Unless otherwise specified under other sections of the Specifications, the Contractor shall perform final cleaning operations as herein specified prior to final inspection.
- C.** Cleaning shall include all surfaces, interior and exterior, which the Contractor has had access to, whether new or existing.

- D.** Employ experienced workmen or professional cleaners for final cleaning.
- E.** Use only cleaning materials recommended by the manufacturer of the surface to be cleaned.
- F.** Use cleaning materials which will not create a hazard to health or property and which will not damage surfaces.
- G.** All broken or defective glass caused by the Contractor's Work shall be replaced at the expense of the Contractor.
- H.** Remove grease, mastic, adhesive, dust, dirt, stains, labels, fingerprints, and other foreign materials from sight-exposed interior and exterior surfaces. This includes cleaning of the Work of all finishing trades where needed, whether or not cleaning by such trades is included in their respective specifications.
- I.** Clean and polish all new and existing glass and plastic glazing (if any) throughout the building(s), on both sides. Clean plastic glazing in accordance with the manufacturer's directions. This cleaning shall be completed by qualified window cleaners at the expense of the Contractor just prior to acceptance of the Work.
- J.** Wash and polish all mirrors.
- K.** Repair, patch, and touch up marred surfaces to the specified finish, to match adjacent surfaces.
- L.** Polish glossy surfaces to a clear shine.
- M.** Do the final cleaning of resilient floors and wood floors as specified under the respective sections of the Specifications.
- N.** Leave all architectural metals, hardware, and fixtures in undamaged, polished conditions.
- O.** Leave pipe and duct spaces, plenums, furred spaces and the like clean of debris and decayable materials.
- P.** In cleaning items with manufacturer's finish or items previously finished by a Subcontractor, care shall be taken not to damage such manufacturer's or Subcontractor's finish. In cleaning glass and finish surfaces, care shall be taken not to use detergents or other cleaning agents which may stain adjoining finish surfaces. Any damage to finishes caused by cleaning operations shall be repaired at the Contractor's expense.
- Q.** Broom clean exposed concrete surfaces and paved surfaces. Rake clean other surfaces of grounds.
- R.** Ventilating systems - Replace filters and clean ducts, blowers, and coils if units were operated during construction.
- S.** Owner's responsibility for cleaning commences at Substantial Completion.

END OF SECTION

**SECTION 01700
PROJECT CLOSEOUT**

1. RELATED DOCUMENTS

- A. This section supplements the General Conditions.
- B. Consult the individual sections of the specifications for specific items required under those sections.

2. OCCUPANCY PERMIT

- A. The Contractor shall coordinate the efforts of all Subcontractors and obtain the Occupancy Permit from the local Building Department. The Owner shall pay any Building Department fee associated with the Occupancy Permit.

3. PARTIAL COMPLETION

- A. At the completion of Work within the building, the Contractor may notify the Prime Designer that the Work within the portion that is Partially Complete. The Prime Designer, or a designee, shall conduct a thorough inspection of the Work. The Prime Designer shall prepare a punch list, setting forth in accurate detail any items and additional items that are not acceptable or incomplete inside that portion. The Contractor shall coordinate all Subcontractors to achieve prompt completion of the punch list.
- B. Prior to requesting Partial Completion the Contractor shall make a thorough inspection of the Work. During this inspection the Contractor shall prepare a comprehensive list of all items remaining to be completed or corrected. This list shall include all remaining Contractor and Subcontractor items to be provided under the Contract Documents.
- C. The Contractor shall not be relieved of the responsibility to provide Contract items left off the Prime Designer's punch list.
- D. If the Prime Designer determines that the Work within that portion of the building is not Partially Complete, the Prime Designer shall inform the Contractor of those items that must be completed before the Prime Designer will prepare the punch list. Upon completion of those items, the Contractor shall again request the Prime Designer to prepare a punch list.
- E. If the Contractor fails to request an inspection that Contractor will be responsible for the condition of the Work even if that portion is occupied.
- F. The date of Substantial Completion for the entire contact and the start of all

associated warranties shall not occur until work in the entire building is complete.

- G. The Prime Designer shall prepare the Certificate of Substantial Completion in accordance with Article 9.6 of the General Conditions after the work in the entire building is complete.
- H. Partial Payment of retainage shall not be made until at least 65 days after the effective date of the Certificate of Substantial Completion.

3. SUBSTANTIAL COMPLETION

- A. Prior to requesting Substantial Completion as provided in Article 9.6 of the General Conditions the Contractor shall make a thorough inspection of the Work. During this inspection the Contractor shall prepare a comprehensive list of all items remaining to be completed or corrected. This list shall include all remaining Contractor and Subcontractor items to be provided under the Contract Documents.
- B. Upon completion of the items noted on the Contractor's list the Contractor shall notify the Prime Designer that the Work is Substantially Complete. The Prime Designer shall then conduct a similar thorough inspection. If the Prime Designer agrees that the Work is Substantially Complete, the Prime Designer will promptly make a thorough inspection and prepare a punch list, setting forth in accurate detail any items on the Contractor's list and additional items that are not acceptable or incomplete. The Contractor shall coordinate all Subcontractors to achieve prompt completion of the punch list.
- C. The Contractor shall not be relieved of the responsibility to provide Contract items left off of the Prime Designer's punch list.
- D. If the Prime Designer determines that the Work is not Substantially Complete, the Prime Designer shall inform the Contractor of those items that must be completed before the Prime Designer will prepare a punch list. Upon completion of those items, the Contractor shall again request the Prime Designer to prepare a punch list.
- E. When the punch list has been prepared, the Prime Designer will arrange a meeting with the Contractor and Subcontractors to identify and explain all punch list items and answer questions on work which must be done before final acceptance.
- F. The Prime Designer may revise the punch list, from time to time, to ensure that all items of Work are properly completed.
- G. The Prime Designer shall prepare the Certificate of Substantial Completion in accordance with Article 9.6 of the General Conditions.

4. RECORD DRAWINGS

- A.** Consult the individual sections of the Specifications for the specific requirements of those sections. In cases of inconsistency the more stringent requirement, as directed by the Prime Designer, shall be required.
- B.** Prior to final payment and completion the Contractor shall provide all marked up As Built Drawings and Microfilm as required under other sections of the Specifications.

5. OPERATING AND MAINTENANCE INSTRUCTIONS

- A.** Consult the individual sections of the specifications for the specific requirements for those sections and for further details and descriptions of the requirements
- B.** Prior to final payment and completion the Contractor shall provide all Operating Manuals and Maintenance Instructions as required by the Contract Documents.

C. OPERATING INSTRUCTIONS AND MANUALS

- (1.)**Subcontractors, installers, and suppliers shall furnish to the Contractor two sets of operating and maintenance instructions of all mechanical, electrical, and manually operated equipment furnished and installed by them. Mechanical and electrical subcontractors shall furnish instructions as specified in their respective sections.
- (2.)**The Contractor shall collect all of the above instructions, bind them into two complete sets, and submit them to the Prime Designer who will deliver them to the Owner.
- (3.)**Submission of operating and maintenance instructions shall be a condition precedent to final payment.

D. INSTRUCTION OF OWNER'S PERSONNEL

- (1.)**Where specified in the individual sections of the specifications, the Contractor and Subcontractor shall instruct the Owner's personnel at the site, in the use and maintenance of equipment installed under the Contract.
- (2.)**Submission to the Prime Designer of a certificate of compliance to this requirement, signed by the Contractor and the Owner's Representative, shall be a condition precedent to final payment.

6. FINAL COMPLETION

A. RELATED REQUIREMENTS

- (1.)** The Contractor's attention is directed to Article 9.7 of the General Conditions.

B. FULL RELEASE OF RETAINAGE

- (1.) Upon completion of all work, and after receipt of all appropriate marked up As Built Drawings, Operating Manuals, Warranties, Guarantees, and Spare Parts required by the Contract Documents, the Prime Designer shall prepare the Certificate of Final Completion.
- (2.) This certificate shall be processed in accordance with the procedures described in the Construction Handbook.
- (3.) The Contractor's signature on this Certificate shall be notarized.
- (4.) The Contractor shall provide a final Application for Payment to complement the close-out process.

C. PARTIAL RELEASE OF RETAINAGE

- (1.) If within 65 days after Substantial Completion, any of the items on the Prime Designer's punch list are not complete or if the Contractor has not provided the appropriate marked up As Built Drawings, Operating Manuals, Warranties, Guarantees, or Spare Parts the Prime Designer shall assign a monetary value for each incomplete item as well as any other items as provided by M.G.L. c.30 §39K, and the Prime Designer shall prepare a Certificate for Partial Release of Retainage
- (2.) If the Prime Designer is required to prepare a Certificate for Partial Release of Retainage the Contractor shall complete all remaining Work in accordance with the provisions of Article 9.7 of the General Conditions.
- (3.) The Contractor's signature on this Certificate shall be notarized.
- (4.) The Contractor may make a request for additional releases of retainage when portions of the Work listed on the Prime Designer's punch list have been satisfactorily completed. Each request shall be accompanied by a new application for payment and a new signed and notarized Certificate for Partial Release of Retainage.
- (5.) The Prime Designer's inspections, required to complete the additional payment applications described in subparagraph C4 above, are subject to provisions of subparagraph 9.7.5 of the General Conditions.
- (6.) Upon completion of all remaining items, the Final Release of Retainage shall be processed in accordance with paragraph B above.

END OF SECTION

DIVISION 23 – HEATING, VENTILATION AND AIR CONDITIONING

PART 1 - GENERAL

1.1 GENERAL

A. The Conditions of the Contract and Division 1, General Requirements shall be part of this section.

1.2 SCOPE OF WORK

A. Summary

The primary purpose for the project is to upgrade the existing heating plant arrangement and incorporate a wood pellet fired boiler. The new heating plant will consist of one (1) new wood pellet fired boiler in addition to the one (1) existing oil-fired boiler. The wood pellet fired boiler will be operated as the primary boiler to maximize the utilization of the wood pellet fuel source and the oil-fired boiler will be used to meet peak and backup heating needs. The new wood pellet boiler will require new venting. A buffer tank will be installed to provide additional volume to the heating loop. The work also includes the replacement of the existing expansion tanks, circulators and other appurtenances. The construction start date is April 1, 2016.

The new wood pellet storage silo shall be filled with 12 tons of new premium grade wood pellets, with no fillers, that meet the following requirements:

- PFI Certified Premium Grade Wood Pellets
- Heating Value: 8,000 – 8,300 BTU/lb. at 3% moisture
- Moisture Content: 3 to 5%
- Ash Content: PFI Premium Standard < 1.0%
- Density \geq 40 lb/cu ft.

B. The scope of work consists of the installation of all materials to be furnished under Division 23, 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 Heating, Ventilating and Air Conditioning drawings, as described in the Specifications, or as reasonably inferred from either, in the opinion of the Architect/Engineer.

C. Section includes

1. Heating Appliance
2. Exhaust Venting
3. Wood Pellet Silo
4. Buffer Tank
5. Hydronic Expansion Tank
6. Hydronic piping, valves and specialties
7. HVAC Insulation
8. HVAC Pumps
9. Hydronic Unit Heater
10. Combustion Air Fan
11. Instruments, Controls and Monitoring
12. Sequence of Operation

1.3 RELATED WORK SPECIFIED ELSEWHERE

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- A. The following related work or materials shall be provided under the designated Sections and coordinated by the Contractor:
 - 1. Cutting and Patching including openings in concrete masonry floors, walls and roof: General Conditions. Cutting and patching of all related piping and products, including openings in masonry floors, walls and roof, shall be the responsibility of the plumbing filed sub-bidder.
 - 2. Electrical power wiring and components: Division 26, Electrical.

1.4 REFERENCES

- A. AABC - National Standards for Total System Balance.
- B. ASHRAE 111 - Practices for Measurement, Testing, Adjusting, and Balancing of Building Heating, Ventilation, Air-conditioning, and Refrigeration Systems.
- C. ASME - Boiler and Pressure Vessel Codes, SEC 9 - Qualification Standard for Welding and Brazing Procedures, Welders, Brazers, and Welding and Brazing Operators.
- D. ASME B16.3 - Malleable Iron Threaded Fittings Class 50 and 300.
- E. ASME B16.22 - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
- F. ASME B31.9 - Building Services Piping.
- G. ASME B40.100 - Pressure Gauges and Gauge Attachments
- H. ASME SEC 4 - Boiler and Pressure Vessel Codes - Rules for Construction of Heating Boilers.
- I. ASME SEC 8D - Boilers and Pressure Vessel Codes - Rules for Construction of Pressure Vessels.
- J. ASTM A53 - Pipe, Steel, Black and Hot-Dipped, Zinc Coated Welded and Seamless.
- K. ASTM B32 - Solder Metal.
- L. ASTM B88 - Seamless Copper Water Tube.
- M. ASTM C335 - Steady-State Heat Transfer Properties of Horizontal Pipe Insulation.
- N. ASTM C547 - Specification for Mineral Fiber Pipe Insulation
- O. ASTM D1784 - Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
- P. ASTM E84 - Surface Burning Characteristics of Building Materials.
- Q. ASTM E96 - Water Vapor Transmission of Materials.
- R. ASTM E 119 - Test Methods for Fire Tests of Building Construction and Materials
- S. ASTM E 814 - Test Method of Fire Tests of Through-penetration Firestops
- T. ASTM F708 - Standard Practice for Design and Installation of Rigid Pipe Hangers
- U. AWS D1.1 - Structural Welding Code – Steel
- V. HI (Hydronics Institute) - Testing and Rating Standard for Cast Iron and Steel Heating Boilers.
- W. ICB, International Certification Board for TABB, Testing Adjusting And Balancing Bureau,
- X. NEBB - Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems.
- Y. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
- Z. NEMA DC 3 - Low-Voltage Room Thermostats.
- AA. NFPA 54 - National Fuel Gas Code.
- BB. NFPA 255 - Surface Burning Characteristics of Building Materials.
- CC. SMACNA - HVAC Systems Testing, Adjusting, and Balancing.
- DD. SMACNA - IAQ Guidelines for Occupied Buildings Under Construction
- EE. TABB - Testing Adjusting and Balancing Bureau

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FF. UL 723 - Surface Burning Characteristics of Building Materials.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing the work of this section with minimum three years documented experience.

1.6 QUALITY ASSURANCE

- A. Provide equipment with manufacturer's name, model number, and rating/capacity identified.
- B. All items of similar class shall be the products of the same manufacturer. All valves, accessory items, etc. shall be from the same source.
- C. Insulation Materials: Flame spread/smoke developed rating of 25/50 or less in accordance with ASTM E84, NFPA 255, and UL 723.

1.7 REGULATORY REQUIREMENTS

- A. Perform Work in accordance with State of Massachusetts Building Code, including codes and standards incorporated by reference.
- B. Conform to ASME B31.9 code for installation of piping system.

1.8 PERMITS

- A. Refer to General Conditions.

1.9 DEMOLITION

- A. The Contractor shall be responsible for demolition of all work associated with their trade. In instances of conflicts of trades, the General Contractor shall coordinate proper control of demolition by the trades and be responsible for unnecessary demolition or damage caused by improper demolition activities.
- B. It is the General Contractor's responsibility to remove all debris from the project.
- C. Demolition work shall be performed in a neat and orderly fashion. After piping, ductwork, equipment, etc., has been removed, neatly cap remaining ductwork and piping, and insulate caps In finished areas, all ductwork and piping shall be cut back to a concealed location, i.e., within walls, above ceilings, etc., before capping.
- D. Before submitting Bids, the contractor shall visit the site with Architectural and Mechanical Plans in hand, and shall inspect all existing systems to determine the extent of demolition work involved. Particular attention is drawn to the removal of existing walls or portions of existing walls. In those areas, all exposed and concealed piping, ductwork, equipment, etc., running across or through affected areas shall be removed as required. Piping and ductwork shall then be either capped, or, if required for the proper continuing operation of an existing system to remain, piping and ductwork shall be rerouted around the affected areas and reconnected as required.
- E. In general, it shall be the responsibility of the contractor to remove demolished equipment, piping, ductwork, etc., from the site and properly dispose of it. If the Owner shall so request, however, the contractor shall turn over demolished equipment, etc., to the Owner for the Owner's use.
- F. Cut, remove and legally dispose of selected mechanical equipment, components, and materials as indicated, including but not limited to removal of mechanical piping, heating units, plumbing fixtures and trim, and other mechanical items made obsolete by the new work.
- G. Location of existing systems and equipment shown on the drawings is based on the best available information. The contractor shall verify dimensions and locations of existing systems and equipment in the field and adjust as necessary.
- H. Certain items of existing equipment and piping or ductwork may be indicated for removal. Items noted for removal shall be disconnected and disposed of by the contractor or turned over to the Owner if the Owner so requested. If instructed to dispose of items, the contractor shall remove the items from the premises and dispose of them in a safe, legal and responsible manner and location. Items noted for

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relocation are intended for reuse in another location as designated on the Drawings. It shall be the responsibility of the contractor to remove the material from its present location, store the material in a safe place and reinstall the material in its new location. Questions regarding the suitability of the material or equipment shall be brought to the attention of the Owner and Engineer in writing.

- I. Demolition work shall be performed in accordance with SMACNA IAQ Guidelines for Occupied Buildings under Construction.

1.10 TEMPORARY HEAT AND TEMPORARY WATER

- A. Refer to section 01.50.00.
- B. Contractor is required to provide temporary space heat and domestic hot water (DHW) if it will be unavailable for more than eight (8) hours.

1.11 SUBMITTALS

- A. Submit product data for the following;
 1. Pipe materials, pipe fittings, valves, and accessories: Provide manufacturers catalog information. Indicate valve data and ratings.
 2. Insulation: Provide product description, list of materials and thickness for each service, and locations.
 3. HVAC Pumps: Provide certified pump curves showing performance characteristics with pump and system operating point plotted. Include NPSH curve when applicable. Include electrical characteristics and connection requirements.
 4. Heating Appliances: Provide data indicating general layout, dimensions, and size and location of water, gas, and vent connections, and electrical characteristics and connection requirements.
 5. Exhaust Venting: Provide data indicating general layout, dimensions, size and material.
 6. Wood Pellet Silo: Provide data indicating general layout, dimensions, size and material.
 7. Buffer Tank: Include equipment dimensions, size of tappings, drains and performance data.
 8. Hydronic Expansion Tank: Include equipment dimensions, size of tappings, drains and performance data.
 9. Hydronic Unit Heater: Provide data indicating general layout, dimensions, and size and location of connections, as well as electrical characteristics and connection requirements.
 10. Combustion Air Fan: Provide data indicating general layout, dimensions, size, material and electrical characteristics.
 11. Controls and Control Elements: Submit diagrams indicating mechanical system control and control system components. Label equipment and control devices using the nomenclature on the drawings. Control devices shall be labeled with settings, adjustable range of control and limits. Include written description of control sequence. Provide detail of panel face including controls, instruments, gauges and labels.

- B. Manufacturer's Installation Instructions:

Indicate procedures which ensure acceptable workmanship and installation standards will be achieved. Submit manufacturer's installation instructions for the following:

1. Pumps, fans, valves and accessories
2. Heating appliances
3. Exhaust Venting
4. Wood Pellet Silo
5. Buffer Tank
6. Hydronic Expansion Tank

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7. Instruments and controls
- C. Shop Drawings:
 1. Include dimensional drawings of equipment indicating components and connections to other equipment and piping.
 2. Indicate capacity, power requirements, and affected adjacent construction.
 3. Provide electrical characteristics and connection requirements.
- D. Inspections:
 1. Formal written documentation certifying acceptance and approval of inspectors for all respective inspections required by federal, state and/or local law, regulation and/or code shall be provided to the Owner by the Contractor.
 2. The Contractor shall provide the Owner with written documentation that the installation of the boilers has been inspected and approved by the State Boiler Inspector and a representative of the Owner's Insurance Company.

1.12 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Division 1.
- B. Deliver materials to site in original factory packaging, labeled with manufacturer's identification. Inspect for damage.
- C. Store materials in original wrapping and protect from weather and construction traffic.
- D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.
- E. Protect insulation against dirt, water, chemical, and mechanical damage.

1.13 ENVIRONMENTAL REQUIREMENTS

- A. Maintain ambient temperatures and conditions required by manufacturers of adhesive, mastic, and insulation cements used as part of the work of this section.
- B. Maintain temperature during and after installation for minimum period of 24 hours.

1.14 RECORD DRAWINGS

- A. Availability of marked up As Built drawings shall be a prerequisite to scheduling final inspection of this contract and said drawings and original contract documents will be used in checking completion of the work.
- B. Non-availability of marked up As Built drawings or inaccuracies therein may be grounds for cancellation and postponement of any scheduled final inspection by the Architect/Engineer until the discrepancy has been corrected.
- C. Record actual locations of valves and hydronic devices.

1.15 OPERATING AND MAINTENANCE MANUALS

- A. The Heating, Ventilating and Air Conditioning Contractor shall provide four (4) sets of operating and maintenance instructions of all mechanical and electrical equipment furnished and installed under this section in both electronic and hard copy format. A draft electronic copy shall first be provided to the Architect/Engineer for review and approval before final sets are issued to the Owner.
- B. Delivery of the operating and maintenance manuals shall be a condition precedent to final payment.
- C. Operating and Maintenance Data shall include the following:
 1. Approved equipment shop drawings
 2. Installation instructions
 3. Manufacturer's recommended operation, maintenance, and inspection procedures

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4. Spare parts lists

1.16 INSTRUCTION OF OWNER'S PERSONNEL

- A. The Heating, Ventilating and Air Conditioning Contractor shall instruct the Owner's personnel, at the site, in the use and maintenance of equipment installed under this section. This shall include specific training on the boilers and related controls to be provided by an authorized representative of the boiler manufacturer. Training provided shall be a minimum of 2 hours. Submission to the Architect/Engineer of a certificate of compliance to this requirement, signed by the Contractor and the Owner's Representative shall be a condition precedent to final payment.
- B. Submission to the Architect/Engineer of a certificate of compliance, signed by the Contractor and an authorized representative of the manufacturer of the wood pellet fired appliances, stating that the wood pellet fired appliances were installed properly and in accordance with manufacturer's requirements. This shall be a condition precedent to final payment.

1.17 GUARANTEE AND SERVICE

- A. Notwithstanding any other requirements of this contract, the Heating, Ventilating and Air Conditioning Contractor shall guarantee the performance of the installation and equipment included in this Section for one year from the date of Substantial Completion as defined in the General Conditions. Should any defects in materials or workmanship appear during this period, they shall be corrected or replaced by the Heating, Ventilating and Air Conditioning Contractor to the satisfaction of the Architect/Engineer, and at no expense to the Owner.
- B. For the wood pellet venting systems, the Contractor is required to inspect the entire venting system (i.e., chimney connector and chimney) and clean as necessary in accordance with the requirements of the boiler manufacturer and manufacturers of the chimney connector and chimney in order to properly control and remove any creosote formation. The venting system inspections and cleaning shall be performed in accordance with the frequencies prescribed by the boiler manufacturer and manufacturers of the chimney liner and chimney connectors and at a minimum in accordance with the following schedule:
 - 1. Semi-monthly during the months of the heating season (i.e., September 15th through June 15th)
 - 2. The above service must be provided by the Contractor for one year from the date of Substantial Completion as defined in the General Conditions.

A sign in sheet shall be maintained by the Contractor in the respective boiler rooms that indicates the following:

- 1. Date
- 2. Type of service (i.e., inspection or cleaning)
- 3. Printed name of person providing service
- 4. Signature of person providing service
- 5. Notes

PART 2 - MATERIALS

2.1 MATERIAL AND EQUIPMENT QUALIFICATIONS

- A. All materials and apparatus required for the work, except as otherwise specifically indicated, shall be new, of first-class quality, and shall be furnished, delivered, erected, connected and finished in every detail and be so selected and arranged as to fit properly into the building spaces. Where no specific type or quality of material is given, a first-class standard article as accepted by industry standards shall be furnished.
- B. Provide materials and equipment that are products of manufacturers regularly engaged in the production of such products which are of equal quality, design and workmanship. Products shall have been in satisfactory commercial or industrial use for a minimum 2 years prior to bid opening. The 2-year period shall include applications of equipment and materials under similar circumstances and of similar size as required for this project. The product shall have been on sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2-year period. Where two or more items of the same class of equipment are required, these items shall be products of a single manufacturer.
- C. Alternative Qualifications: Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturers' factory or laboratory tests, is furnished.
- D. Manufacturer's Nameplate: Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

2.2 PIPE, FITTINGS AND JOINTS

Piping System	Materials	Fittings	Joints
Carbon Steel Piping (For hydronic piping with specified nominal sizes 3.0 to 12 in.)	Welded or seamless carbon steel conforming to ASTM A53 B, Standard	Wrought steel, standard (welded joint) or Class 150 (flanged joint) conforming to ASME B16.5 or ASME B16.9 requirements, as manufactured by Grinnell or Stockham, or equal.	Welded or flanged
Carbon Steel Piping (For hydronic piping with specified nominal sizes 2.5" and less)	Welded or seamless carbon steel conforming to ASTM A53 B, Standard	ASME B16.3, Malleable Iron, Class 150	Threaded or Pressed

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2.3 VALVES

Valve Type	Manufacturer Model Number	Description	Alternate Acceptable Manufacturers
Ball Valves (Isolation valves up to 2 inches) Provide extended stem where necessary so that valve handle does not interfere with pipe insulation.	Nibco Model T-580-CS-R-66	Carbon steel two piece body, blowout-proof stem, stainless steel trim, teflon seats and packing, lever handle. Provide with full port thru 1" and conventional port in sizes over 1 inch, MSS-SP-110.	Watts, Stockham, or Milwaukee
Butterfly Valve (Isolation valves > 2 inches)	Apollo Model LD141	Ductile iron body, lug style, stainless steel disc, EPDM seats, locking handle, rated for 200 psi, 275°F. Positive shutoff, tamper resistant memory stop. MSS SP-67 & API 609	Watts, Armstrong
Swing Check Valves	Nibco Model F-938-31	Ductile iron body, bolted bonnet, bronze trim, swing disc, Class 150, flanged.	Watts, Hammond, or Milwaukee
Balancing Valve	Taco Model ACCU-FLO Size as noted on plans.	Balancing valve for hydronic systems. Cast iron body with flanged connections, Class 125.	Bell & Gossett, Watts, Victaulic, or equal.
Electric Zone Control Valve (24 Volt)	Taco Model as indicated on plans. Furnish fittings to install new zone valves in existing piping.	Valve body shall be forged brass construction with a maximum operating pressure rating of 300 psi and 220 degrees F. Actuator shall be 24 volt open/close type with manual override.	Honeywell, Armstrong or Barber Coleman

2.4 PIPING ACCESSORIES

Accessory	Manufacturer Model Number	Description	Alternate Acceptable Manufacturers
Unions	---	Ferrous Piping: 150 psig malleable iron, threaded Copper Pipe: Bronze, soldered joints	---
Dielectric Connections	Watts 3000 Series	Union or flange with water impervious isolation barrier	---

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Accessory	Manufacturer Model Number	Description	Alternate Acceptable Manufacturers
Wye-Pattern Strainer	Watts series 77F-DI-125	Cast iron body, flanged connections, stainless steel #20 mesh screen, cast iron flanged retainer cap and drain/blowoff connection with closure plug. Maximum working pressure: 200psi WOG @ 210°F	Nibco or Stockham
Thermometers	Watts Series TA	Liquid filled, 9" thermoplastic polyester resin or aluminum case, adjustable angle, glass lens, organic fill sensing fluid, separable brass socket. Scale Ranges: 30 degree F to 240 Degree F. Accuracy: +/-1 % of full scale.	Trerice, Ernst Gage Company, or Davis Instrument Mfg. Co.
Combination Temperature and Pressure Gauges	Watts DPTG-3 Series	2 1/2" round black-enamel steel case, center back outlet, 1/2" NPT connections, Kostil polymer window, copper alloy Bourdon tube pressure elements, bimetal spiral spring temperature element, tin alloy welding. ASME B40.100 rated. Scale Ranges: 0 – 75 psi. Working Temperature: 60°F – 320°F.	USG Products or Weiss
Expansion Tank	Taco Model as noted on plans.	Construction: Welded steel, rated for a maximum working pressure of 125 psig and a maximum operating temperature of 240 degree F, with heavy duty replaceable full acceptance butyl bladder. Designed and constructed per ASME Section VIII, Division 1 standards.	Amtrol, Elbi or Bell & Gossett.
Air Separator	Spirotherm VSR300FL	Steel body, brass vent head, non-ferrous float, Viton seal and O-ring, copper coalescing medium bundle filling the entire vessel. Maximum working pressure 150 psi. Maximum operating temperature 270 degree F.	Taco, Bell & Gossett or Armstrong.
Air Vent	Taco 409 Vent	Brass construction. Maximum working pressure of 150 psi and maximum temperature of 240 degree F.	Bell & Gossett or Armstrong.

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Accessory	Manufacturer Model Number	Description	Alternate Acceptable Manufacturers
Magnetic Filter	Fernox TF1 Total Filter	Inline magnetic filter with glass fiber reinforced Nylon plastic body construction. Maximum temperature of 257 degree F and maximum working pressure of 3 bar. Maximum flow rate of 11 gpm.	Boiler Mag or Adey

2.5 SLEEVES

- A. The contractor shall provide, set in place and be held responsible for the location of all sleeves required for the work. In the event that failure to do so requires cutting and patching of finished Work, it shall be done at the contractor' expense.
- B. Sleeves shall be provided as follows:
 - 1. Sleeves for Pipes through Non-fire Rated Floors, Beams, Walls, and Footings: Steel pipe of minimum 18 gage thick galvanized steel or schedule 10 carbon steel pipe.
 - 2. Sleeves for Pipes through Fire Rated and Fire Resistive Floors and Walls, and Fire Proofing: Prefabricated fire rated sleeves including seals. Schedule 40 carbon steel sleeve with firestop sealant as specified herein.
- C. Pipes passing through floors, walls or partitions shall be provided with sleeves having an inside diameter one (1") inch larger than the outside diameter of the pipe, conduit or insulation enclosing the pipe.
- D. Piping shall run with insulation continuous through sleeve.

2.6 PIPE HANGERS AND SUPPORTS

- A. Manufacturers:
 - 1. Grinnell Corp.
 - 2. Carpenter & Paterson Inc.
 - 3. Creative Systems Inc.
 - 4. Flex-Weld, Inc.
 - 5. Glope Pipe Hanger Products Inc.
 - 6. Michigan Hanger Co.
 - 7. Superior Valve Co.
 - 8. Engineer approved equal
- B. Regulatory Requirements
 - 1. All piping supports shall conform to ASTM F708.
 - 2. Hydronic piping shall conform to ASME B31.9.
- C. Hydronic Piping:
 - 1. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Carbon steel, adjustable swivel, split ring.
 - 2. Hangers for Pipe Sizes 2 to 4 inches: Carbon steel, adjustable, clevis.
 - 3. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
 - 4. Wall Support for Pipe Sizes to 3 inches: Cast iron hooks.
 - 5. Vertical Support: Steel riser clamp.

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6. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
 7. Copper Pipe Support: Copper-plated, carbon steel ring.
- D. Accessories
1. Hanger Rods: Mild steel threaded both ends, threaded on one end, or continuous threaded.
 2. Insulation Shields: Galvanized carbon steel; Grinnell Figure 167.
 3. Pipe Saddles: Steel pipe saddles welded to pipe.
 4. High density rigid insulation sections or suitable factory fabricated units in lieu of pipe saddles.
- E. Hanger Sizing Requirements
1. Pipe hangers installed on insulated pipe shall be sized to allow the insulation to pass through the hanger.

2.7 MECHANICAL SYSTEMS IDENTIFICATION

- A. Identification work shall comply with ANSI A13.1. Names, abbreviations and other designations used in mechanical identification work shall correspond with designations shown on drawings specified or scheduled.
- B. Acceptable manufacturers for identification devices shall be Seton Identification Products, Craftmark Identification Systems and Safety Sign Co.
- C. Piping System Identification:
1. Provide manufacturer's standard pre-printed, plastic wrap-around pipe markers, semirigid snap-on or permanent adhesive pressure-sensitive vinyl type, color-coded, pipe markers, complying with ANSI A13.1.
 2. Install on pipe insulation segment where required for hot non-insulated pipes.
 3. Include arrows to show normal direction of flow:
- D. Valve Identification:
1. Provide 19-gage polished brass valve tags with stamp-engraved piping system abbreviation in 1/4" high letters and sequenced valve numbers 1/2" high, and with 5/32" hole for fastener. Provide 1-1/2" diameter tags, except as otherwise indicated.
 2. Valve Tag Fasteners: Provide manufacturer's standard solid brass chain (wire link or beaded type), or solid brass S-hooks of the sizes required for proper attachment of tags to valves, and manufactured specifically for that purpose.
- E. Label color coding and sizes shall conform to ANSI A13.1 and OSHA. Use the following legend:
- | | |
|-----|--------------------------|
| HWS | Heating hot water supply |
| HWR | Heating hot water return |
- F. Whenever Owner's standards differ from the above, observe and follow Owner's standard labeling conversion.

2.8 FIRESTOPPING

- A. The contractor shall be responsible for fire stopping any openings required by their trade. The contractor shall coordinate fire stopping with the General Contractor. In the event of a conflict between trades the General Contractor shall control fire stopping activities by the trades.
- B. Firestopping shall be provided for the following:
1. Penetrations through fire-resistance-rated floor and roof construction including both empty openings and openings containing cables, pipes, ducts, conduits, and other penetrating items.
 2. Penetrations through fire-resistance-rated walls and partitions including both empty openings and openings containing cables, pipes, ducts, conduits, and other penetrating items.

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3. Penetrations through smoke barriers, smoke partitions and construction enclosing compartmentalized areas involving both empty openings and openings containing penetrating items.
 4. Penetrations at tops of fire-resistance rated walls and partitions of the following construction types:
 - a. Concrete unit masonry walls and partitions.
 - b. Gypsum board assembly walls and partitions.
- C. System Performance Requirements:
1. General: Provide firestopping systems that are produced and installed to resist the spread of fire, according to requirements indicated, and the passage of smoke and other gases. ASTM E 814 (Standard Test Method for Fire Tests of Through-penetration Fire Stops) products listed below shall be used at openings in fire resistive wall and floors that are evaluated in accordance with ASTM E119 – Standard Test Methods for Fire Tests of Building Construction and Material.
 2. F-Rated Through-Penetration Firestop Systems: Provide through-penetration firestop systems with F ratings indicated, as determined per ASTM E 814, but not less than that equaling or exceeding the fire-resistance rating of the constructions penetrated.
 3. T-Rated Through-Penetration Firestop Systems: Provide through-penetration firestop systems with T ratings, in addition to F ratings, as determined per ASTM E 814, where indicated and where systems protect penetrating items exposed to contact with adjacent materials in occupiable floor areas. T-rated assemblies are required where the following conditions exist:
 - a. Where firestop systems protect penetrations located outside of wall cavities.
 - b. Where firestop systems protect penetrations located outside fire-resistive shaft enclosures.
 - c. Where firestop systems protect penetrations located in construction containing doors required to have a temperature-rise rating.
 - d. Where firestop systems protect penetrating items larger than a 4 inch diameter nominal pipe or 16 sq. in. in overall cross-sectional area.
 4. For firestopping exposed to view, traffic, moisture, and physical damage, provide products that do not deteriorate when exposed to these conditions.
 - a. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.
 - b. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.
 5. For firestopping exposed to view, provide products with flame-spread values of less than 25 and smoke-developed values of less than 50, as determined per ASTM E 84.
- D. Project Conditions:
1. Environmental Conditions: Do not install firestopping when ambient or substrate temperatures are outside limits permitted by firestopping manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.
 2. Ventilation: Ventilate firestopping per firestopping manufacturers' instructions by natural means or, where this is inadequate, forced air circulation.
- E. Firestopping General:
1. Compatibility: Provide firestopping composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the firestopping under conditions of service and application, as demonstrated by firestopping manufacturer based on testing and field experience.
 2. Accessories: Provide components for each firestopping system that are needed to install fill. Use only components specified by the firestopping manufacturer for the designated fire-resistance-rated systems. Accessories include but are not limited to the following items:
 - a. Permanent forming/damming/backing materials including the following:
 - i. Semirefractory fiber (mineral wool) insulation.
 - ii. Ceramic fiber.

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- iii. Sealants used in combination with other forming/damming materials to prevent leakage of fill materials in liquid state.
 - iv. Fire-rated formboard.
 - b. Temporary forming materials
 - c. Substrate primers
 - d. Collars
 - e. Steel sleeves
 3. Applications: Provide firestopping systems composed of materials specified in this section that comply with system performance and other requirements
- F. Fill materials for through-penetration firestop systems:
1. Intumescent, Latex Sealant: Single-component, intumescent, latex formulation.
 2. Products: Subject to compliance with requirements, provide one of the following:
 - a. Intumescent Latex Sealant:
 - i. Metacaulk 950, The RectorSeal Corporation.
 - ii. Fire Barrier CP 25WB Caulk, 3M Fire Protection Products.
 - iii. AC-20 FTR Acoustical and Insulation Sealant, Pecora Corp.
 - iv. FIRECODE Compound, United States Gypsum Co.
 - v. FS-One, Hilti, Inc.
- G. Mixing:
1. For those products requiring mixing prior to application, comply with firestopping manufacturer's directions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other procedures needed to produce firestopping products of uniform quality with optimum performance characteristics for application indicated.

2.9 GLASS FIBER PIPING INSULATION

- A. Insulation shall be provided for all new piping, fittings and valves, as well as any insulation that was removed on existing piping as part of the work scope.
- B. Manufacturer:
1. Johns/Manville Micro-Lok.
 2. Other acceptable manufacturers offering equivalent products:
 - a. Owens Corning.
 - b. Certainteed Manson.
 - c. Knauf.
- C. Insulation: ASTM C547 rigid molded, noncombustible.
1. 'K' value (SI 'k' value): ASTM C335, 0.25 at 75 degrees F (0.036 at 24 degrees C).
 2. Minimum Service Temperature: -20 degrees F (-28.9 degrees C).
 3. Maximum Service Temperature: 850 degrees F (454 degrees C).
 4. Maximum Moisture Absorption: 0.2 percent by volume.
- D. Vapor Barrier Jacket:
1. White kraft paper reinforced with glass fiber yarn and bonded to aluminized film.
 2. Moisture Vapor Permeability: ASTM E96; 0.02 perm-inches.

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- E. Insulation Materials: Flame spread/smoke developed rating of 25/50 or less in accordance with ASTM E84, NFPA 255, and UL 723.

2.10 HYDRONIC PUMPS

- A. Manufacturers: Manufacturer and model as indicated on plans, Taco, Grundfos, Bell & Gossett, Armstrong, or Engineer approved equal.
- B. Furnish and install pumps of size and capacity as scheduled on the drawings. Pumps shall be in-line type for installation in vertical or horizontal piping. Pump must be capable of being serviced without disturbing pipe connections
- C. Pump shall be rated for 150 psi working pressure and a maximum operating temperature of 240 deg. F.
- D. The liquid cavity shall be sealed off at the motor shaft by mechanical seal, suitable for continuous operation at 240 deg. F.
- E. Motor shall meet NEMA specifications and shall be the size, voltage and enclosure called for on the plans.
- F. Each pump shall be factory tested. It shall then be thoroughly cleaned and painted with at least one coat of high-grade machinery enamel prior to shipment. The paint shall be free of ozone depleting substances.
- G. Provide all wiring necessary to power system equipment, components and controls. Provide all necessary sensors and controls for a full turn-key operation.

2.11 WOOD PELLET FIRED BOILER

- A. The boiler shall be Maine Eco Pellet Heating (MEco), D'Alessandro Termomeccanica, EVOWORLD, or Engineer approved equal. Capacity shall be as indicated on plans. Any requirements that are not met by the equipment as supplied by the manufacturer shall be furnished and installed by the Contractor.
- B. Boiler Assembly
 - 1. Steel flame-tube boiler with heat exchanger sealed pressure tight, built on steel base plate.
 - 2. Automatic fuel handling system.
 - 3. Automatic ash removal system that deposit ash into an attached storage bin that is accessible for periodic removal of stored ash.
 - 4. All components shall be located for easy access for future serviceability.
 - 5. The boiler shall be equipped with an Automatic Manual Reset Low Water Cut-Off (LWCO) with Test Capability. The LWCO shall have a means for testing the operation of the device without resorting to draining the entire system. Such means shall not render the device unsafe or inoperable.
 - 6. The boiler shall be equipped with a safety limit control that will cut off the fuel supply to prevent water temperature from exceeding the maximum allowable temperature and shall lockout, requiring manual reset.
 - 7. The boiler shall be equipped with a control, separate from the safety limit control, which will cut off the fuel supply when the water temperature reaches an adjustable operating limit, which shall be less than the maximum allowable temperature.
 - 8. The boiler shall have at least one officially rated pressure relief valve set to relieve at or below the maximum allowable working pressure of the boiler.
 - 9. The boiler shall be equipped with suitable primary (flameguard) safety controls, safety limit switches, and burners or electric elements as required by a nationally recognized standard.
- C. Boiler Ratings and Listings
 - 1. The boiler shall bear the ASME "H" Stamp with a working pressure of 30 PSI and shall be National Board Listed.
- D. Boiler Controls
 - 1. Any Boiler not equipped with a factory wired shut-off switch: Installing Contractor shall furnish and install an electrical junction box at the Boiler and equipped with a SPST switch marked "ON/OFF" to be wired into the limit circuit so as to function as a service switch. Switch box shall be mounted on

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the Boiler jacket panel within without obstructing cleanout panel accessibility or preventative maintenance routines.

- E. The boiler shall be factory assembled and test fired to determine the correct operating parameters of the heater. Combustion tests must also be performed during testing to assure compliance to heaters parameters. Complete operating and installation manual are to be furnished with every heater.
- F. Boilers with inputs greater than 200,000 BTU/Hr. Installing Contractor shall obtain from the Boiler Manufacturer a completed [by the Boiler manufacturer] Form H-3 Manufacturers Data Report for Watertube Boilers as required by the Provisions of the ASME Code Rules, Section IV and shall transmit to the Owner after Boiler installation for Record Purposes.
- G. Installing Contractor shall include, as part of his Contract, all charges and costs for Boiler and Burner testing, start-up, checkout, adjusting, field and State inspections, including service contracts for systems and equipment as here-in-after specified. Provide signed documentation to the Awarding Authority for completion of specified procedures.
- H. Contractor shall obtain certificate of boiler inspection after boiler installation has been completed and pay all fees associated with such inspection. After receipt of certificate of Inspection, Installing Contractor shall furnish a suitable glass front frame in which to place said certificate. Frame, with Inspection certificate inserted therein, shall then be placed on or posted in a suitable location within the Boiler room in which the new Boilers have been installed.
- I. It shall be the responsibility of the Installing Contractor to deliver ASME H-3 Forms, O&M manuals, together with complete wiring and piping diagrams, to the Owner/User and to obtain a receipt for the instructions. Written notification specifying the Name, Address, Telephone Number and available service program of Boiler Service Group as specified.
- J. A manually operated remote heating plant shutdown switch shall be furnished and installed just outside the Boiler room door and shall be marked for easy identification. If the boiler room door is on the building exterior the switch should be located just inside the door. If there is more than one (1) Boiler room door, there shall be a switch located at each door. Shutdown switches must be wired to disconnect all power to the Boiler controls.
- K. Furnish and install all control components necessary to obtain a fully functional control system. The contractor is responsible for providing all controls, relays and related equipment necessary to provide for a full turn-key installation.

2.12 BUFFER TANK

- A. Manufacturers: Taco, Model BTH0125F02-125N, Lochinvar, Bell & Gossett, or Engineer approved equal.
- B. Maximum working pressure: 125 psi @ 375°F
- C. Flanged inlet and outlet connections.
- D. Construction: carbon steel with exterior red oxide primer finish with 1" thick silicon blanket thermal insulation.
- E. Listings and ratings: Design and constructed per ASME Code Section VIII, Division 1.

2.13 WOOD PELLET STORAGE SILO

- A. The new wood pellet storage silo shall meet the following minimum specifications:
 - 1. Capacity
 - a. Minimum filling capacity of 14.4 tons with a wood pellet density of 45 lb/cf; Brock Model C45-00903 or Engineer approved equal.
 - b. Maximum 9 ft diameter.
 - c. Minimum 60 degree hopper.
 - d. Rated for 90 mph constant wind with 3 second gusts of 100 mph.
 - 2. Refer to Section 1.2 "Scope of Work" of this specification for requirement to furnish initial supply of wood pellets.

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3. Furnish and install transition boot, suction metering switch and all necessary equipment to connect silo to the wood pellet boiler to provide a full turnkey system. Where applicable flexible pellet transfer hose and other applicable components shall be protected from UV rays, through the use of a tray to conceal the hose or an equally approved method.
 4. Furnish and install silo pneumatic fill tube, approximately 6-inch diameter, which allows pellet supplier to fill silo from ground level.
 5. Provide an electrical grounding system for the wood pellet silo and transfer system.
 6. Pellet conveyor assembly, which shall be controlled by boiler.
- B. Vacuum Delivery System
1. The vacuum delivery system shall be controlled by the boiler and transport fuel from the wood pellet silo to the local storage bin attached to the boiler.
 2. Plastic spiral hose with integrated copper grounding wire.

2.14 EXHAUST VENTING

- A. Chimney Connector for Wood Pellet Boiler shall be Model DSP Stove Pipe by Selkirk, Security Chimneys, DuraVent, or Engineer approved equal.
1. Size as noted on plans.
 2. Double wall listed stove pipe with heavy gauge stainless steel inner pipe having resistance to corrosion and heat. Galvanized steel pipe shall not be used for wood pellet appliance.
 3. In accordance with NFPA 211, for connector diameters $\geq 6"$ and $\leq 10"$ metal thickness shall be 24 gauge (minimum 0.024") or thicker.
 4. For connections to the wood pellet vents, on the wall of the chimney within the mechanical room, a durable label shall be permanently and plainly affixed that reads: *"This Chimney is for Solid Fuel Appliances that burn Wood Pellets Only. Do Not Connect Other Types of Appliances"*.
- B. Factory Built Chimney for Wood Pellet Boiler shall be Sure-Temp Type HT Premium Series by Selkirk, Security Chimneys, DuraVent, or Engineer approved equal.
1. Double wall stainless steel insulated listed chimney, configuration and size as noted on plans.
 2. Compatible with installed heating appliance
 3. Furnish with insulated thimble, thru-the-wall support kit, inspection tee/plug and compatible chimney top.

2.15 HYDRONIC UNIT HEATERS

- A. Manufacturers: Modine (model as noted on plans), Trane, Carrier or Engineer approved equal.
1. Serpentine copper tube coil design
 2. Two-Piece Casing
 3. Tapped holes for suspension by threaded rod
 4. Side supply and return connections for low clearance installation
 5. Fingerproof Fan Guard

2.16 COMBUSTION AIR FAN

- A. Manufacturers: Field Controls (model as noted on plans), Tjernlund, Enerflex or Engineer approved equal.
1. Air flow 500 SCFM at 1.0" w.c..
 2. UL Listed

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3. Integral fan-proving safety switch
4. High efficiency blower wheel
5. ½ HP

2.17 INSTRUMENTS AND CONTROL ELEMENTS

- A. System Controls shall be by Maine Energy Systems, Stiebel Eltron, Taco, Tekmar, or Engineer approved equal.
 1. Provide full space heating system control to achieve intended system sequence of operation (See Part 4 of this Specification), including control of both heating appliances, pumps, combustion air fan and wood pellet fuel supply train.
 2. Furnish and install two (2) silo level alert sensors; at the 1/3 full and ½ full levels. The indicators shall provide visual indication and electronic connection to boiler controls to provide automatic email notification to Owner (See Part 4 of this Specification).
 3. Flow Meters shall be Onicon Model F-3100 Series, Siemens, Omega, or Engineer approved equal.
 - a. Inline Electromagnetic Water Flow Meter in accordance with line sizes as noted on plans.
 - b. Carbon Steel/PTFE Liner
 - c. ANSI 150 Flange with Integral Mount Electronics and Display
 - d. Accurate within $\pm 0.4\%$ of reading from 3.3 to 33 ft/s.
 - e. Certificate of wet calibration
 4. BTU Meters shall be Onicon Model System-10 BTU Meter, Siemens, Omega, or Engineer approved equal.
 - a. Stand-alone BTU meter factory configured to provide any four of the following: totalized energy, energy rate, flow rate, supply temperature, return temperature or delta T.
 - b. N.I.S.T. traceable calibration with certification
 - c. Precision solid state temperature sensors; custom calibrated and matched to an accuracy equal to or better than $\pm 0.15^\circ\text{F}$ over calibrated range.
 5. Data Logger shall be Onset Model H22-001, National Instruments, Omega, or Engineer approved equal.
 - a. Reconfigurable energy logging system for energy monitoring applications.
 - b. 15-channel system to include three (3) Flexsmart modules with base unit.
 - c. Minimum of 502K nonvolatile flash data storage.
 - d. Logging Interval: one second to 18 hours, user-specified interval.
 - e. AC Power adapter with battery backup and connecting cables.
- B. Equipment compatible software for configuring equipment and components, offloading data and analyzing data. Two (2) complete disk copies of software shall be included.
- C. Data Logger Reader shall be Onset Model HOBO U-Shuttle U-DT-1, National Instruments, Omega, or Engineer approved equal.
 1. One (1) portable data logger reader shall be furnished to allow easy downloading of data from data loggers.
 2. Fully compatible with submitted data logging equipment.
 3. Data Capacity: 4 MB
 4. Data logger to reader transfer speed: USB/optic 64K in 30 seconds; Serial 512K in 60 seconds.
 5. Reader to host transfer speed: 4 MB in 3 to 5 minutes.
- D. The Contractor is responsible for furnishing and installing all controls, relays and related components necessary to provide for a full turn-key installation.

PART 3 - INSTALLATION

3.1 TEMPORARY OPENINGS

- A. The contractor shall ascertain from an examination of the drawings whether any special temporary openings in the building will be required for the admission of apparatus provided under this Division and shall notify the Owner or the General Contractor accordingly. In the event of failure of the contractor to give sufficient notice in time to arrange for these openings during construction, the contractor shall assume all costs of providing such openings thereafter.

3.2 INSTALLATION - PIPING

- A. Ream pipe and tube ends. Remove burrs. Bevel or groove plain end ferrous pipe.
- B. Remove scale and dirt on inside and outside before assembly.
- C. Prepare piping connections to equipment with grooved joint couplings, flanges, or unions.
- D. Keep open ends of pipe free from scale and dirt. Protect open ends with temporary plugs or caps.
- E. Route piping in orderly manner, parallel to building structure, and maintain gradient.
- F. Install piping to conserve building space, and not interfere with use of space.
- G. Group piping whenever practical at common elevations.
- H. Sleeve pipe passing through partitions, walls and floors.
- I. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- J. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.
- K. Provide access where valves and fittings are not exposed.
- L. Slope piping and arrange systems to drain at low points. Use eccentric reducers to maintain top of pipe level. Provide 3/4" drain valves with hose and connections at all low points, bases of vertical risers, main shut-off valves and at equipment.
- M. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welds.
- N. Where more than one piping system material is specified, ensure system components are compatible and joined to ensure the integrity of the system is not jeopardized. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.

3.3 INSTALLATION - VALVES

- A. Install all valves in accordance with manufacturer's instructions
- B. Install valves with stems upright or horizontal, not inverted.
- C. Install ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.
- D. Pipe relief valve outlet to nearest floor drain.

3.4 INSTALLATION – PIPING ACCESSORIES

- A. Install in accordance with manufacturer's instructions.
- B. Use unions, flanges, and couplings downstream of valves and at equipment or apparatus connections. Do not use direct welded or threaded connections to valves, equipment or other apparatus.
- C. Use non-conducting dielectric connections whenever joining dissimilar metals.
- D. Provide manual air vents at all system high points.
- E. For automatic air vents in ceiling spaces or other concealed locations, provide vent tubing to nearest drain.
- F. Where one line vents several relief valves, make cross sectional area equal to sum of individual vent areas.

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- G. Strainers: Any equipment which operates with strainers shall have strainers installed at all times. In no case shall any equipment having strainers be run without a clean strainer in place. This applies equally and especially to systems operated during construction or for testing. When equipment and systems are officially turned over to the Owner, all equipment shall be clean and have clean strainer installed.
- H. All strainer blow-down connections shall be provided with a 3/4" drain valve with hose connection and brass cap.
- I. Escutcheons: Provide chrome plated escutcheons on pipes wherever they pass through floors, ceilings, walls or partitions in finished locations.

3.5 INSTALLATION - SLEEVES

- A. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
- B. Extend sleeves through floors 1 inch above finished floor level. Caulk sleeves.
- C. Where piping penetrates floor, ceiling, or wall, close off space between pipe or duct and adjacent work with fire stopping insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.
- D. Install chrome plated steel escutcheons at finished surfaces.

3.6 INSTALLATION - PIPE HANGERS AND SUPPORTS

- A. Support horizontal piping as scheduled.
- B. Install hangers to provide minimum 1/2 inch (13 mm) space between finished covering and adjacent work.
- C. Place hangers within 12 inches (300 mm) of each horizontal elbow.
- D. Use hangers with 1-1/2 inch (38 mm) minimum vertical adjustment.
- E. Support horizontal cast iron pipe adjacent to each hub.
- F. Support vertical piping at every floor. Support vertical cast iron pipe at each floor at hub.
- G. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
- H. Support riser piping independently of connected horizontal piping.
- I. Design hangers for pipe movement without disengagement of supported pipe.
- J. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.
- K. Schedules

Pipe/Size	Maximum Horizontal Spacing	Maximum Vertical Spacing
Copper or copper-alloy tubing, 1-1/4" diameter and smaller	6'-0"	10'-0"
Copper or copper-alloy tubing, 1-1/2" diameter and larger	10'-0"	10'-0"
Steel pipe	12'-0"	15'-0"

3.7 INSTALLATION PIPING SYSTEM IDENTIFICATION

- A. Install in accordance with manufacturer's recommendations

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- B. Where identification is to be applied to surfaces which require insulation, painting or other covering or finish, install identification after completion of covering and painting. Install identification prior to installation of acoustical ceilings and similar removable concealment.
- C. Piping Identification: Locate pipe markers as follows wherever piping is exposed to view in occupied spaces, mechanical rooms, accessible maintenance spaces (shafts, tunnels, plenums) and exterior non-concealed locations:
 - 1. Near each valve, control device, major equipment items and points of origination and termination.
 - 2. Near each branch, excluding short take-offs for fixtures and terminal units; mark each pipe at branch, where there could be question of flow pattern.
 - 3. Near locations where pipes pass through walls or floors/ceilings, or enter non-accessible enclosures.
 - 4. At access doors, manholes and similar access points which permit view of concealed piping.
 - 5. Spaced intermediately at maximum spacing of 50' along each piping run, except reduce spacing to 25' in congested areas of piping and equipment.
 - 6. On piping above removable acoustical ceilings, except omit intermediately spaced markers.
- D. Valve Identification:
 - 1. Provide valve tag on every valve, cock and control device in each piping system; exclude check valves, valves within factory-fabricated equipment units, plumbing fixture faucets, convenience and lawn-watering hose bibs, and shut-off valves at plumbing fixtures, HVAC terminal devices and similar rough-in connections of end-use fixtures and units. List each tagged valve in valve schedule for each piping system. For each page of valve schedule, provide glazed display frame, with screws for removable mounting on masonry walls.
 - 2. Submit valve schedule for each piping system, typewritten and reproduced on 8-1/2" x 11" bond paper. Tabulate valve number, piping system, system abbreviation (as shown on tag), location of valve (room or space), and variations for identification (if any). Mark valves which are intended for emergency shut-off and similar special uses, by special "flags", in margin of schedule. In addition to mounted copies, furnish extra copies for Maintenance Manuals as specified in Division 1.
 - 3. Mount valve schedule frames and schedules in mechanical rooms where indicated or, if not otherwise indicated, where directed by Architect/Engineer. Where more than one major machine room is shown for project, install mounted valve schedule in each major machine room, and repeat only main valves which are to be operated in conjunction with operations of more than single machine room.

3.8 INSTALLATION - FIRESTOPPING

- A. Preparation:
 - 1. Surface Cleaning: Clean out openings immediately prior to installing firestopping to comply with recommendations of firestopping manufacturer and the following requirements:
 - a. Remove all foreign materials from surfaces of opening and from penetrating items that could interfere with adhesion of firestopping.
 - b. Clean opening and penetrating items to produce clean, sound surfaces capable of developing optimum bond with firestopping. Remove loose particles remaining from cleaning operation.
 - c. Remove laitance and form release agents from concrete.
 - 2. Masking Tape: Use masking tape to prevent firestopping from contacting adjoining surfaces that will remain exposed upon completion of Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from firestopping materials. Remove tape as soon as it is possible to do so without disturbing firestopping's seal with substrates.
- B. Installing firestops at through-penetrations.

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1. General: Comply with the "System Performance Requirements" article in Part 1 and the through-penetration firestop manufacturer's installation instructions and drawings pertaining to products and applications indicated.
2. Install forming/damming materials and other accessories of types required to support fill materials during their application and in the position needed to produce the cross-sectional shapes and depths required to achieve fire ratings of designated through-penetration firestop systems. After installing fill materials, remove combustible forming materials and other accessories not indicated as permanent components of firestop systems.
3. Install fill materials for through-penetration firestop systems by proven techniques to produce the following results:
 - a. Completely fill voids and cavities formed by openings, forming materials, accessories, and penetrating items.
 - b. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
 - c. For fill materials that will remain exposed after completing work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

C. Cleaning:

1. Clean off excess fill materials and sealants adjacent to openings and joints as work progresses by methods and with cleaning materials approved by manufacturers of firestopping products and of products in which opening and joints occur.
2. Protect firestopping during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated firestopping immediately and install new materials to produce firestopping complying with specified requirements.

3.9 INSTALLATION - INSULATION

- A. Verify that piping has been tested before applying insulation materials.
- B. Verify that surfaces are clean and dry, with foreign material removed.
- C. Install in accordance with manufacturer's instructions.
- D. On exposed piping, locate insulation and cover seams in least visible locations.
- E. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations.
- F. Insulate entire system including pump impellers, suction diffusers, tanks, accessories, fittings, valves, unions, flanges, strainers, flexible connections and expansion joints. Diaphragm type expansion tanks shall not be insulated.
- G. Secure seams with pressure sensitive tape closure and butt joints with minimum 3 inch wide tape of same material as vapor barrier jacket.
- H. Finish insulation at supports, protrusions, and interruptions.
- I. Insulation thickness shall be in accordance with the requirements of the current edition of the Massachusetts Building Code and the following schedule:

PIPING SYSTEMS	PIPE SIZE Inches	THICKNESS Inches
Heating Supply and Return	Less than 1-1/2"	1-1/2"
Heating Supply and Return	Equal to or greater than 1-1/2"	2"

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3.10 INSTALLATION - HVAC PUMPS

- A. Install in accordance with manufacturer's instructions.
- B. Provide access space around pumps for service. Provide no less than minimum as recommended by manufacturer.
- C. Decrease from line size with reducers.
- D. Support piping to pump such that no weight is carried on pump casings.
- E. Provide air cock and drain connection on horizontal pump casings.
- F. Refer to drawings for pump sizes, capacities and operating characteristics.

3.11 INSTALLATION - BOILERS

- A. Install in accordance with manufacturer's instructions and applicable codes.
- C. Provide piping connections and accessories as indicated.
- D. Pipe relief valves to floor drain. Support piping in a manner than no weight is imposed on the valve.
- E. Provide for connection to electrical service.
- F. Manufacturer's Field Services
 - 1. Wood pellet boiler must be initially started up by an authorized representative of the manufacturer.
 - 2. Prepare and start systems under provisions of Division 1.
 - 3. Instruct operating personnel in operation and maintenance of units.

3.12 EXHAUST VENTING

- A. Install in accordance with manufacturer's requirements and NFPA 211.
- B. Refer to Section 1.17 "Guarantee and Service" of this specification for inspection and cleaning requirements associated with the venting system of the wood pellet boiler.

3.13 INSTALLATION - INSTRUMENTS AND CONTROL ELEMENTS

- A. Verify that systems are ready to receive work.
- B. Beginning of installation means installer accepts existing conditions.
- C. Sequence work to ensure installation of components is complementary to installation of similar components in other systems.
- D. In finished spaces, all wiring shall be concealed (i.e., fished).
- E. Coordinate installation of system components with installation of mechanical systems equipment such as air handling units and air terminal units.
- F. Ensure installation components are complementary to installation of similar components.
- G. Install in accordance with manufacturer's instructions.
- H. Mount outdoor reset thermostats and outdoor sensors indoors, with sensing elements outdoors with sun shield.
- I. Provide separable sockets for liquids and flanges for air bulb elements.
- J. Provide valves with position indicators and with pilot positioners where sequenced with other controls.

3.14 CLEANING AND FLUSHING

- A. Final Cleaning and Flushing:
 - 1. Upon completion of all work, all piping systems shall be flushed with water liquid alkaline solution (Ferno HVAC Cleaner F3, or approved equal) with emulsifying agents and detergents, to remove dirt, grease, grit, chips and foreign matter. Flushing solution shall be disposed of off-site.

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2. Solution for flushing shall be used in sufficient quantity to produce a velocity of at least 2.5 feet per second. Flushing shall continue until discharge solution shows no discoloration or evidence of foreign materials.
3. During flushing operation, all valves shall be operated several times, bypasses opened, pumps operated and equipment flushed.
4. Upon completion of flushing operations, all strainers, filters and blowdowns shall be removed and cleaned of accumulated waste.
5. Prior to commissioning the system, introduce a system protector (Ferrox HVAC Protector F1, or approved equal).

3.15 MAINTENANCE

- A. The contractor shall provide the necessary skilled labor to assure the proper operation and to provide the required current and preventative maintenance for the equipment and controls provided under this Division until final acceptance of the building by the Owner. The contractor shall not assume acceptance of the building by the Owner until he receives written notification.
- B. The General Contractor shall receive calls for problems experienced in the operation of the equipment provided under this Division and he shall take steps to immediately correct any deficiencies that may exist. Correction of deficiencies noted is the responsibility of the contractor.
- C. The General Contractor shall provide a check list and shall put a copy of it in the boiler or main mechanical room. The check list shall itemize each piece of equipment furnished under his Section.
- D. The General Contractor shall certify on this check list that he has examined each piece of equipment and that, in his opinion, it is operating as intended by the manufacturer, it has been properly lubricated, and that all necessary current and preventative maintenance has been performed as recommended by the manufacturer and by good and accepted practice.
- E. The HVAC Contractor shall check all controls in the building to ascertain that they are functioning as designed. This shall include but not be limited to thermostats, aquastats, humidstats, freeze-stats and fire-stats, etc. This portion of the work shall be performed by the Contractor who installed the controls.
- F. During construction, the General Contractor shall ensure that all filters are in place on all equipment. If the equipment is operated during construction, strict attention shall be paid to maintaining clean and effective filters. Filters shall be new and clean when the system testing and balancing takes place. The General Contractor shall bear the cost of all filters and media during construction until final acceptance by the Owner. This requirement shall apply equally to fluid filters and strainers.
- G. Where normal preventative maintenance for any piece of equipment requires special tools, the contractor shall furnish the appropriate tools for that piece of equipment (i.e., special filter removal hooks, valve wrenches, etc.).

3.16 AIR ELIMINATION

- A. The Contractor shall be responsible for bleeding all air from closed water piping systems after the system has been filled, and thereafter rebleeding as often as required to completely eliminate air from the system.
- B. Where work on an existing piping system has allowed air to enter that system, the Contractor shall also bleed that system even if no piping work was done in the area where air has developed.
- C. Where air cannot be bled from any piping due to the absence of an air vent, the Contractor shall install a manual air vent in locations required to successfully bleed such air.
- D. Where the piping layout would require an air vent in an inaccessible location, the Contractor shall install an extended 1/4-inch copper bleed line and petcock to an accessible location, such as a closet, mechanical room, above lay-in ceiling, etc.

3.17 LUBRICATION

- A. All equipment installed under this Contract having moving parts and requiring lubrication shall be properly lubricated by contractor according to manufacturer's recommendations prior to testing and operation. Any such equipment discovered to have been operated before lubrication by the contractor is subject to

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rejection and replacement at no additional cost to the Owner. Units furnished with sealed bearings are exempted.

- B. The contractor shall furnish and install, as appropriate on all equipment requiring lubrication, Zerk pressure gun grease fittings or sight gravity-feed oilers equipped with shutoff and needle valve adjustment. Units furnished with sealed bearings and lifetime lubrication are exempted. All fittings and oilers are to be fully accessible for lubrication with equipment which does not require special adapters. Where fittings would be otherwise inaccessible, furnish and install extended grease lines.

3.18 TESTING, ADJUSTING, AND BALANCING

- A. Verify that systems are complete and operable before commencing work. Ensure the following conditions:
 - 1. Systems are started and operating in a safe and normal condition.
 - 2. Control systems are installed complete and operable.
 - 3. Proper thermal overload protection is in place for electrical equipment.
 - 4. Piping Systems:
 - a. Hydronic systems are flushed, filled, tested and vented.
 - b. Pumps are rotating correctly.
 - c. Proper strainer baskets are clean and in place.
 - d. Service and balance valves are open.
- B. Beginning of work means acceptance of existing conditions.
- C. Preparation
 - 1. Provide instruments required for testing, adjusting, and balancing operations. Make instruments available to Owner to facilitate spot checks during testing.
 - 2. Provide additional balancing devices as required.
- D. Installation Tolerances
 - 1. Hydronic Systems: Adjust to within plus or minus 10 percent of design.
- E. Adjusting
 - 1. Ensure recorded data represents actual measured or observed conditions.
 - 2. Permanently mark settings of balancing devices allowing settings to be restored. Set and lock memory stops.
 - 3. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.
 - 4. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.
- F. Sequencing
 - 1. For all systems provide initial balancing to tolerances indicated in this section. After initial balancing readjust systems as directed by engineer and owner as necessary to achieve uniform space temperatures free from objectionable drafts and noises.
- G. Water System Procedure
 - 1. Adjust water systems to provide required or design quantities.
 - 2. Use calibrated Venturi tubes, orifices, or other metered fittings and pressure gages to determine flow rates for system balance. Where flow metering devices are not installed, base flow balance on temperature difference across various heat transfer elements in the system.
 - 3. Adjust systems to provide specified pressure drops and flows through heat transfer elements prior to thermal testing. Perform balancing by measurement of temperature differential in conjunction with air balancing.

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4. Balance systems with automatic control valves fully open to heat transfer elements.
5. Balance water distribution systems by means of balancing cocks, valves, and fittings. Do not use service or shut-off valves for balancing unless indexed for balance point. Measure and record flows at each balancing device.
6. Measure and record inlet and outlet temperatures at heat transfer elements and at cooling and heating plants at full cooling and heating capacity.
7. Where available pump capacity is less than total flow requirements or individual system parts, full flow in one part may be simulated by temporary restriction of flow to other parts.

PART 4 – SEQUENCE OF OPERATION

4.1 GENERAL

- A. Power, control and interlock wiring shall be provided in accordance with current electrical code to accomplish the sequence of operation as indicated below and to ensure a full turn-key installation (by Division 26).

4.2 CONTROL DEVICES

- A. All devices and sensors shall be adjustable.

4.3 BOILER CONTROL

- A. Heating boilers shall be activated in a cascaded fashion to maintain hot water supply temperature according to outdoor reset schedule. Priority operation shall be given to the wood pellet fired boiler, with the oil-fired boiler used only for peaking and backup needs. However, in order to exercise the oil-fired boiler, a timer shall be incorporated to ensure that the oil-fired boiler runs for at least 10 minutes each week (frequency and duration settings shall be adjustable).
- B. On a call for activation of the oil-fired boiler, the combustion air fan shall run and air flow proved as a permissive to allow the boiler to start. The combustion air fan shall stop when the oil-fired boiler shuts down.
- C. Hot water supply temperature shall be modulated based on an adjustable outdoor air reset schedule as follows.

Outdoor Air Reset Schedule	
Outdoor Air Temperature (Degree F)	Hot Water Supply Temperature (Degree F)
65	160
0	180

- D. The boiler control system shall activate the associated boiler pump(s).
- E. One of the two primary pumps shall run continuously during the heating season.
- F. Operation of the primary loop pumps shall be rotated to ensure even run time. If one primary loop pump fails to operate then the other primary loop pump shall automatically start.
- G. The boiler control system shall automatically control the transfer of wood pellets from the pellet storage silo to the on-board boiler day bin.
- H. If either boiler fails to start when called upon, the boiler control system shall send an email to up to ten (10) email addresses as provided by the Owner.
- I. When the level in the pellet storage silo drops to 1/3 full, the boiler control system shall send an email to up to ten (10) email addresses as provided by the Owner.

4.4 RADIATION

- A. The existing two way zone valves shall cycle open and close as required to maintain space temperature in their associated zones as controlled by their respective thermostats. If any zone valve for a given distribution loop is open, then the associated zone pump shall run.
- B. The thermostat for UH-1 shall open the zone valve on a call for heat and the end switch shall start the associated pump (P-5). The unit heater shall cycle on and off as necessary to maintain required space temperature in the mechanical room.

END OF SECTION

DIVISION 26 – ELECTRICAL

PART 1 – GENERAL

1.01 GENERAL PROVISIONS

- A. The Conditions of the Contract and other sections of Division 1, General Requirements, apply to work of this Section.
- B. The Work to be done under this section is shown on the Drawing E-1.

1.02 WORK TO BE PERFORMED

- A. The scope of work under this Section, without limiting the generality thereof, includes the furnishing of all labor, materials, equipment, services and incidentals necessary to complete all of the Work in accordance with the Contract Documents which are intended to describe and provide for a finished piece of Work, and are to be cooperative; what is called for by either shall be complete in every detail, notwithstanding whether or not every item necessarily involved is particularly mentioned.
- B. Electrical Work shall generally consist of, but not be limited to:
 - 1. Obtain all permits and inspections and pay all fees;
 - 2. Selective demolition of items as noted or shown;
 - 3. Provide all wire and cable, connectors and connections;
 - 4. Provide all raceways, fittings and supports;
 - 5. Provide all device, pull, outlet and junction boxes;
 - 6. Provide all wiring devices and plates;
 - 7. Provide all safety disconnect switches and starters as shown;
 - 8. Provide all panelboards and circuit breakers as scheduled;
 - 9. Provide all nameplates and signage as shown or specified;
 - 10. Provide all lighting fixtures and lamps as scheduled or specified;
 - 11. Provide all automatic temperature control wiring, raceways and devices.
 - 12. Provide all cutting, patching and painting as required;
 - 13. Testing, training, commissioning and demonstration of all systems;
 - 14. Record Drawings;
 - 15. Operation and Maintenance Instruction and Manuals;
 - 16. Warranties.
- C. Pay all permit and inspection fees.
- D. Restore to match surrounding surfaces any area disturbed or exposed by the Work of this contract.
- E. Perform work and provide material and equipment as shown on Drawings and as specified or indicated in this Section of the Specifications. Completely coordinate work of this Section with work of others and provide a complete and fully functional installation. Drawings and Specifications form complimentary requirements; provide work specified and not shown, and work

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shown and not specified as though explicitly required by both. Although work is not specifically shown or specified, provide supplementary or miscellaneous items, appurtenances, devices and materials obviously necessary for a sound, secure and complete installation. Remove all debris caused by the work.

- F. Drawings are diagrammatic and indicate general arrangement of systems and work included in Contract. It is not intended to specify or to show every offset, fitting or component; however, Contract Documents require components and materials whether or not indicated or specified as necessary to make the installation complete and operational.
- G. As work progresses and for duration of Contract, maintain complete and separate set of prints of Contract Drawings at job site at all times. Record work completed and all changes from original Contract Drawings clearly and accurately, including work installed as a modification or addition to the original design. Indicate actual circuiting, light fixture locations, device outlet locations, switch assignments, loadcenter schedule, etc.

1.03 RELATED WORK SPECIFIED UNDER OTHER SECTIONS

- A. The following items of work are specified and included under other sections of the specifications:
 - 1. Division 23 - Heating, Ventilation and Air Conditioning
- B. All electric motors shall be furnished and set in place by the trade requiring same and shall be wired under this section.
- C. All control devices including starters, thermostats, pneumatic-electric switches, electric-pneumatic switches, aquastats and alternators required for the automatic temperature control system shall be furnished and installed under the Heating, Ventilating and Air Conditioning Section of the Specifications and wired under this section unless otherwise indicated.

1.04 SUBMITTALS

- A. Submit shop drawings and manufacturer's product data in accordance with the provisions of the General Conditions. Submit quantity of copies as requested.
- B. List of material and equipment requiring shop drawings shall include, but is not limited to:
 - 1. Wire and Cable
 - 2. Wire and Cable Connectors and Devices
 - 3. Raceways
 - 4. Boxes
 - 5. Wiring Devices
 - 6. Disconnect Switches and Starters
 - 7. Circuit Breakers
 - 8. Nameplates
 - 9. Lighting Fixtures
- C. Submittals shall be indexed from list above. Add additional items to end of list. Check, stamp and mark with project name shop drawings and product data before submitting for approval. Specifically indicate on shop drawing transmittal form or by separate letter any deviations from Contract Documents because of standard shop practice or other reason. Cross out, but do not obliterate, material not intended for inclusion in the Work. Clearly indicate material to be included in the Work.

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- D. Submit for approval all materials incorporated in the Work. Installation of material which is not approved shall be at the risk of the Electrical Subcontractor, and the Owner may order that it be removed and/or replaced.
- E. Submit samples of any material or equipment requested, prior to approval.
- F. The Engineer will review one initial submittal, and one re-submittal of any item. If review of re-submittals beyond the first re-submittal are required, the Electrical Subcontractor shall bear the Engineer's cost to review the re-submittal. If materials which have previously been approved or approved-as-noted are re-submitted, the Electrical Subcontractor shall bear the Engineer's cost to review the re-submittal.

1.05 CODES, ORDINANCES AND PERMITS

- A. All Work shall be done in strict accordance with the Codes, rules and regulations governing electrical work in the Town of Northfield, and the Commonwealth of Massachusetts, and the Massachusetts Electrical Code. If there is any conflict between plans or specifications and such rules and regulations, the rules and regulations shall take precedence.
- B. The publications and/or standards listed below form a part of this specification. The publications are referenced in text by the basic designation only.
 - 1. National Fire Protection Association (NFPA) - USA:
 - a. No. 70 National Electrical Code (NEC)
 - b. No. 72 National Fire Alarm Code
 - 2. Commonwealth of Massachusetts
 - a. 527 CMR 12.00 Massachusetts Electrical Code
 - b. 780 CMR Massachusetts State Building Code, 8th Edition
- C. Perform work strictly as required by rules, regulations, standards, codes, ordinances, and laws of local, state, and federal government, and other authorities that have lawful jurisdiction.
- D. Give notices, file plans, obtain permits and licenses, pay all fees and obtain all necessary approvals from authorities that have jurisdiction. Deliver all certificates of inspection to the Engineer. No work shall be covered before examination and approval by the Authority Having Jurisdiction. Replace any imperfect or condemned work with materials conforming to the requirements, and satisfactory to the Engineer, without extra cost to the Owner. Obtain all required permits for the Work of this section.
- E. Where the Engineer is to witness testing or inspections, provide not less than seven (7) calendar days notice to the Engineer of such inspections or testing.
- F. Where the local Authority Having Jurisdiction (AHJ) requires work which is not included in the Contract, and where such work will result in an added cost to the Owner, obtain such requirement from the AHJ in writing. Such requirements shall be supported by applicable code, ordinance or law citation(s), or other justification, to the full satisfaction of the Owner.

1.06 INSPECTION OF SITE

- A. Prior to submitting a bid, the bidder is advised to with prior arrangement with the Owner, visit the site (See Advertisement for date) and shall at that time, inspect all existing conditions to ascertain the exact scope and nature of the work that is required under this Contract, how it relates to existing work to remain and all job conditions and restrictions.
- B. Bidders are advised to visit the site and inform themselves as to conditions under which this work will be performed, prior to submitting prices. Failure to do so will, in no way relieve the successful

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bidder from the responsibility of furnishing any materials or performing any work in accordance with the true intent of the Drawings and Specifications.

- C. No claim for extra compensation will be recognized if difficulties are encountered which an examination of the site conditions, Drawings and Specifications prior to executing the Contract would have revealed.

1.07 STORAGE AND REMOVAL OF MATERIALS

- A. Provide suitable containers on-site for storage of materials, or store material off-site. Type and location of containers shall be subject to the approval of the Engineer.
- B. Provide suitable containers for demolition materials. Empty containers when they become full, and remove from the site immediately upon completion of demolition activities. Type and location of containers shall be subject to the approval of the Engineer.
- C. Lawfully dispose of all demolished materials. Regulated materials shall be disposed of, with certified bills of lading turned over to the Owner.

1.08 SAFETY

- A. Be individually and jointly responsible for all safety on the Project. This shall include safety to the workers, Subcontractors, the Engineer and Owner and their respective employees. The General Contractor and each Subcontractor shall develop and implement all safety programs required by mandated and industry standard regulations.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Products furnished shall be designed and approved for the intended use, shall meet all requirements of the Massachusetts Electrical Code (MEC), and local codes, shall be manufactured in accordance with the standard indicated, and shall meet the requirements specified in the Contract Documents. Materials and equipment shall be listed by a nationally recognized testing laboratory.
- B. All material incorporated in the Work shall be new and unused. Samples of any material or item shall be furnished upon request of the Engineer, prior to approval.
- C. All products shall be rated for and approved for use in the application shown, regardless of any notations on the plans. Equipment located outdoors or in wet locations shall be weatherproof, and/or enclosed in suitably rated enclosures. All equipment shall be rated for the current, voltage and phases at which they are applied.
- D. All workmanship shall be of the highest quality, as determined by the Engineer. Repair or replace all Work which is not of the highest quality and workmanship.
- E. All equipment and components shall be installed in strict compliance with manufacturers' recommendations. Consult the manufacturer's installation manuals for all wiring diagrams, schematics, physical equipment sizes, etc., before beginning system installation.
- F. It is the intent of the Specifications that one manufacturer be selected, not a combination, for any particular classification of material. For example, all wire of one manufacturer, all switches of one manufacturer, etc.
- G. Where materials, equipment, apparatus, or other products are specified by manufacturer, brand name, type or catalog number, such designation is to establish standards of performance, quality, type and style.

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- H. Be responsible for ordering and furnishing the correct quantity of material required. Routing and equipment arrangements shown on the drawings are approximate only and are not warranted to be accurate.

2.02 WIRE AND CABLE

A. General

1. Minimum wire size shall be No.14 AWG.
2. All conductors shall be annealed copper, 98% conductivity, Class B stranding, except No.10 AWG and smaller diameter may be solid.
3. Aluminum conductors are not allowed.
4. Minimum sizes shall be No. 12 AWG for power and lighting and No. 14 AWG for control.
5. Conductors shall be identified (colored) as required by the MEC.
6. Wire and cable in underground ducts shall be approved for use in wet locations.
7. Wire and cable shall be manufactured by General Cable Co., American Wire, Okonite, or approved equal.

B. NEC Type THWN/THHN: UL 83

1. Conductors for power, lighting, grounding and control; above grade; No. 14 AWG through No. 8 AWG; shall be NEC type THWN/THHN.

C. NEC Type MC: UL 1569, with full size grounding conductor, and steel or aluminum interlocked armor sheath.

1. Metal-Clad cable shall have full size green grounding conductors.
2. Metal-Clad cable shall be used in concealed locations only. Concealed locations include above ceilings and within dry wall partitions.
3. Metal-Clad cable shall be used in dry locations only.
4. Metal-Clad cable shall be used in all areas of assembly and immediately adjacent areas.

D. Type NM-B Cable shall not be used.

2.03 WIRE AND CABLE CONNECTORS AND DEVICES

A. Wire and Cable Connectors and Devices: UL 486.

- B. Ground conductors of # 14, 12 and 10 AWG shall be made up using only green wire nuts with grounding pigtail provisions.

2.04 RACEWAYS

A. Rigid Metal Conduit (RMC): UL 6. Fittings – threaded.

B. Electrical Metallic Tubing (EMT): UL 797. Fittings – compression one inch and below, set screw over one inch.

C. Flexible Metallic Conduit (FMC): UL 1.

D. Liquid-tight Flexible Metallic Conduit (LFMC): UL 360. Use for connections at exterior mounted equipment, or other location exposed to weather or wet conditions.

- E. Fittings for metallic raceway shall be steel. Connectors for EMT, FMC, LFMC shall have insulated throat.

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- F. Steel supports or racks shall be galvanized steel channel and fittings. Supports shall be manufactured by Unistrut, Kindorf, Husky Products Company, or approved equal. Steel support rods or support bolts for conduits shall be 1/8" diameter for each inch or fraction thereof of diameter of conduit size, but no rod or bolt shall be less than 1/4" in diameter.
- G. All required fittings, offsets and bends required shall be provided to route the conduits from source to destination, whether these are shown on the plans or not. Arrange conduits as required to avoid obstructions, and account for field conditions. Provide all supports as required by the National Electrical Code.
- H. Wireways shall be painted steel trough with screw mounted covers fabricated from a minimum of 14 gauge steel with ANSI grey polyester coating over phosphatized surfaces, inside and outside. Wireways shall be sized as required. Wireways shall be furnished without knockouts.

2.05 BOXES

- A. Outlet Boxes: UL listed, NEMA OS 1, with marked volume. Size boxes in accordance with volume requirements of MEC.
- B. Outlet boxes shall be specifically designed for the construction encountered, with suitable supports and attachments.
 - 1. Surface mounted outlet boxes shall be specifically designed for the construction encountered, with suitable supports and attachments. Outlet boxes shall be metallic, in gangs and configurations to suit the application. Outlet boxes may be surface mounted in unfinished areas.
- C. Pull boxes shall be code gauge sheet steel, painted, with screw covers. In wet, exterior or basement areas, provide galvanized sheet steel boxes, with gasketed cover. Where dimensions are shown, these are based on no splices. Increase dimensions as required if splices are provided in pull boxes
- D. Junction boxes shall be of size and type to accommodate (1) structural conditions, (2) size and number of raceways, conductors or cables entering, splices, and (3) devices or fixtures for which required.
- E. Special care shall be taken to set all boxes correctly square and true with the building finish. Junction boxes and accessories shall be as manufactured by Steel City, Appleton, Raco, or approved equal.

2.06 WIRING DEVICES

- A. Switches:
 - 1. Single pole, double pole, three way or 4 way as required, 20A, 120/277 volt, heavy duty, quiet commercial specification grade, self-grounding with green ground screw. Provide lock switch with removable key where indicated on plans.
 - 2. Switches shall be colored as selected, with matching device plate.
- B. Receptacles:
 - 1. Specification grade NEMA 5-20R 20A for 20 ampere protected branch circuits, NEMA 5-15R for 15 ampere protected circuits, 125V, side-wired, self-grounding.
 - 2. Receptacles shall be colored as selected, with matching device plate.
 - 3. Ground Fault Circuit Interrupter (G.F.C.I., GFI) duplex, 20 amp, 120 volt, specification grade, 5 mA sensitivity/trip, Class A, with pilot light. Where non-GFI receptacles are mounted in common view with GFI receptacles, provide "designer" type receptacle to match appearance of GFI receptacle.

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C. Device Plates:

1. Device plates shall be pressed steel or brushed stainless steel, one piece, single or multi-gang type selected to match the device or combination of devices. So-called "goof" plates are not allowed.
2. Exterior device plate/cover shall be cast metal, lockable, vertical, weatherproof while-in-use with appropriate device insert. Provide each cover with outdoor rated padlock, all keyed alike, maximum shackle size.

D. Wiring devices shall be manufactured by Pass & Seymour/Legrand, Hubbell or Leviton.

2.07 PANELBOARDS

- A. Provide panelboards as indicated on the drawings. Panelboards shall be provided with copper buss, bolt-on circuit breakers. Provide copper neutral and ground buss. Provide galvanized sheet steel enclosure, and painted cover with flush door, locking latch and circuit directory pocket. Boxes shall be of sufficient size to provide at least a minimum code gutter space on all sides.
- B. The panelboards and all components shall be designed, manufactured and tested in accordance with the latest applicable standards of UL and NEMA including:
 1. UL 67 -- Standards for Panelboards
 2. UL 50 -- Standards for Cabinets and Boxes
 3. UL 489 -- Standards for Molded Case Circuit Breakers
- C. Panelboards shall meet Federal Spec. W-P-115c June, 1984.
- D. Panelboards shall have an arc flash warning label applied, complying with the MEC.
- E. Circuit breakers shall be compatible with and UL listed for use in the panelboard provided. Circuit breakers shall be quick-make, quick-break molded case type in amperes and poles to suit, or as called for on the Drawings. Where serving lighting circuits, provide switch duty (SWD) rated circuit breakers. Where serving heating, air conditioning or refrigeration loads, provide HACR rated circuit breakers. Where serving outlets located in living rooms, dining rooms, bedrooms, hallways, etc., provide arc fault circuit protecting circuit breakers.
- F. Circuit breakers shall be toggle type, manually operated, trip free with simultaneous opening/closing of all common poles. Trip units shall be thermal-magnetic type. Prior to material release, verify all circuit breaker rating and poles and adjust as required to suit existing circuits and coordinate with all powered equipment to be served as installed or approved, and adjust to suit.
- G. All panels shall be of safety dead front type and shall be labeled by U.L.
- H. Panelboards shall have 10% spare circuit breakers, and 25% spare space, or as scheduled on the plans. Where space is required, include all required bussing, connections, hardware, etc. to allow installation of the largest frame size breaker possible.
- I. Panelboards shall be fully rated. Series rating shall not be acceptable. Panelboards shall be rated minimum 22,000 amperes interrupting capacity.
- J. Panelboards shall be manufactured by Square D, General Electric or Siemens.

2.08 MANUAL STARTERS

- A. Manual starter shall be a toggle type switch with overload protection and integral or standalone pilot light, designed for use on motor circuit. Provide with ampacity, poles and enclosure suitable

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for installation. Provide properly sized overload element(s), based on measured running load of motor protected.

- B. Manual starter shall be manufactured by Square D, General Electric or Siemens.

2.09 EXISTING DISTRIBUTION EQUIPMENT

- A. Where connections are made in existing panelboards or other distribution equipment, the panel index shall be revised to indicate the new loads served. All existing panelboards that do not have a circuit directory card mounted in a frame with noncombustible plastic cover shall have one installed on the inside of the door. All directory cards shall be properly filled in, using a typewriter, and indicate areas and devices served by each unit. Where spares or spaces are provided, mark these designations in pencil by hand.
- B. New circuit breakers, disconnects, starters, etc. added to existing equipment shall be the same frame size and interrupting capacity as existing panelboards and circuit breakers. New circuit breakers installed in existing panelboards shall be listed as fully compatible with the panelboard.

2.10 NAMEPLATES

- A. Black phenolic nameplates, screw-on type, with 1/4" minimum white engraving shall be furnished for all equipment and properly fastened with brass screws. Lettering shall be minimum 1" high where label is above eye level. Nameplates shall be provided for the following equipment:
 - 1. Manual starters
 - 2. Junction boxes 4-11/16" and larger
 - 3. Panelboards
 - 4. Overcurrent and/or disconnecting means
- B. Label all overcurrent, disconnecting and control item names to match the equipment controlled as referred to by the installing contractor.
- C. Submit a complete listing of all nameplates required, for review and approval prior to engraving.

2.11 LIGHTING FIXTURES

- A. Provide lighting fixtures, equipment and components where shown on Drawings, and as specified, wired and assembled. Provide approved connectors, fittings, and other appurtenances as required.
- B. Fixtures shall be complete with light source of the type noted in schedules and shall have metal parts, glassware, plastic diffusers, etc., free from scratches, cracks, and other defects. Any items damaged during shipment, handling, or installation shall be replaced without expense to the Owner.
- C. Fixtures shall be: Columbia LXEM4-35HL-RFP-EU or equal by Deco or National.

2.12 TRANSFORMER

- A. Provide 120 to 24 AC Transformer with integral secondary over current protection, rating per the plans, or as required to power the load served.
- B. Provide RIB TR Series or equal by ACME or Jefferson.

2.12 ZONE VALVE CONTROL

- A. Provide 24 volt control relays as required to actuate the control sequence specified. Relays shall be self-contained with transformer.

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- B. Provide TACO ZVC406-EXP zone valve control unit with number of zones as required or approved equal.

2.13 CONTROL RELAY

- A. Provide 120 volt control relays as required to actuate the control sequence specified. Relays shall be self-contained.
- B. Provide TACO SR500 series switching relay with number of zones as required or approved equal.

2.13 KEY VAULT

- A. Provide combination type locking key vault, Master 5401D or approved equal.
- B. Install key to exterior boiler shut-off switch padlock in key vault.

PART 3 – EXECUTION

3.01 MATERIALS AND WORKMANSHIP

- A. Work shall be executed in workmanlike manner and shall present neat, rectilinear and mechanical appearance when completed. Maintain maximum headroom at all times. Do not run raceway exposed unless shown exposed on drawings. Material and equipment shall be new and installed according to manufacturer's recommended best practice so that completed installation shall operate safely and efficiently.
- B. Review installation details of all electrical equipment in public areas with the Engineer. Cooperate fully with the General Contractor and the Engineer in this regard. Any work installed which is not reviewed with and approved by the Engineer is subject to re-work at no increase in contract price.
- C. All workmanship shall be of the highest quality, as determined by the Engineer. Repair or replace all Work which is not of the highest quality and workmanship.
- D. All equipment and components shall be installed in strict compliance with manufacturers' recommendations. Consult the manufacturer's installation manuals for all wiring diagrams, schematics, physical equipment sizes, etc., before beginning system installation.

3.02 DEMOLITION

- A. Demolish the existing systems to allow installation of the new systems. No components, items or materials are to be re-used, unless specifically noted herein. All demolition material shall become the property of the General Contractor, for his lawful disposal, except any material which the Owner may salvage. Equipment to be turned over to the Owner as salvaged shall be moved to on-site storage as directed by the Owner.
- B. Lawfully dispose of all demolished materials. Regulated materials shall be disposed of, with certified bills of lading turned over to the Owner.

3.03 CONTINUITY OF SERVICES

- A. Do not interrupt existing services without Owner's and Engineer's approvals.

3.04 TESTING, INSPECTION AND CLEANING

- A. Test wiring and connections for continuity and grounds before fixtures are connected; demonstrate insulation resistance by megger test as required. Insulation resistance between conductors and grounds for secondary distributions systems shall meet NEC requirements.

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- B. Verify and correct as necessary: voltages, tap settings, trip settings and phasing on equipment from secondary distribution system to points of use. Test secondary voltages at loadcenters, and at other locations on distribution systems as necessary. Test secondary voltages under no-load and full-load conditions.
- C. Test lighting fixtures with specified lamps in place for 10 hours. Do not operate lamps other than for testing before final inspection by Engineer. Replace lamps that fail within 90 days after acceptance by Engineer within Contract Price.
- D. Provide necessary testing equipment and testing.
- E. Failure or defects in workmanship or materials revealed by tests or inspection shall be corrected promptly and retested until satisfactory results are achieved. Replace defective material.
- F. Final Inspection
 - 1. At the final inspection, a factory-trained representative of the manufacturer of the major equipment shall demonstrate that the systems function properly in every respect.
- G. Clean panels and other equipment. Panelboard interiors shall be cleaned and vacuumed. Equipment with damage to painted finish shall be repaired to Engineer's satisfaction.
- H. After completion of project, clean the exterior surface of equipment included in this section.

3.05 WARRANTY

- A. Materials provided under this section shall be warranted against defects in materials and workmanship for not less than one (1) year from the date of substantial completion, which date shall be as agreed by the Owner and General Contractor.
- B. Respond to the site to address any warranty contact from the Owner within 48 hours. If the defective item can be repaired, it shall be repaired within 48 hours. Repairs shall be to the full satisfaction of the Owner, and repairs which render an item in a condition less than new will not be accepted. If the item cannot be repaired within 48 hours, it shall be replaced within 48 hours. If the item cannot be repaired or replaced within 48 hours, provide such temporary work as directed by the Owner to address the issue until such time as the issue is permanently addressed. If the issue appears to be across all same or similar products, be prepared to address (repair or replace) the remaining same or similar items.

3.06 SYSTEM START-UP AND OPERATION

- A. Provide all labor and materials and service necessary for the initial start-up and operation of all systems and equipment furnished and installed under this Section of the Specifications.
- B. Cooperate fully with other trades during start-up of equipment provided under their sections.

3.07 OPERATION AND MAINTENANCE MANUALS

- A. The following information shall be submitted for record purposes at project closeout:
 - 1. Final as-built drawings and information for items listed in this paragraph
 - 2. Wiring diagrams
 - 3. Installation information
 - 4. Signed Permits/Certificate of Inspection
 - 5. Warranties.

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- B. Two (2) Operation and Maintenance Manuals shall include the following information: one copy of all approved submittals, Instruction books and/or leaflet, recommended renewal parts list and list of local distributors who service installed system. O&M manuals shall be bound in properly sized, indexed and tabbed 3-ring binders, with front and edge labeling.
- C. INSTRUCTION: Provide instruction as required to the building personnel and fire and safety personnel. "Hands-on" demonstrations of the operation of the system shall be provided.

3.08 ACCESS AND ACCESS PANELS

- A. Provide proper access to material or equipment that require access, inspection, replacement, repair or service and coordinate their delivery with the installing Trade. If proper access cannot be provided, confer with Engineer as to best method of approach to minimize effects of reduced access.

3.09 FIRE BLOCKING AND STOPPING

- A. Provide all materials and labor to penetrate or remove and re-install existing fire blocking, or re-route wiring to avoid fire blocking.
- B. Provide fire stopping for all electrical conduits which enter or pass through fire rated walls or floors. Materials and methods of fire stopping shall be approved by UL. Fire seal fittings shall be used around cable, in sleeves, or in core drilled holes passing through fire rated walls and floors. Fire stopping shall be T&B Fire-Seal, O.Z. Gedney, Minnesota Mining and Manufacturing Company or approved equal.

3.10 WIRING METHODS

- A. Install wire and cable in approved raceways as specified and as approved by authorities that have jurisdiction.
- B. Wiring methods shall be as follows:
 - 1. Interior, finished, dry locations, exposed – None (conceal wiring methods).
 - 2. Interior, mechanical, electrical or other utility spaces, exposed – EMT or RMC.
- C. Only the best possible workmanship for type MC cable installation shall be accepted. Type MC cable which is not properly supported, neatly installed, or bundled shall be removed and replaced at no additional cost. The acceptability of Type MC cable installation shall be solely the determination of the Engineer.
- D. Provide flexible conduits for connections to electrical equipment and to appliances and equipment that are subject to movement, vibration or misalignment; where equipment connections dictate; and where noise transmission must be eliminated or reduced.
- E. All wiring in finished spaces shall be run concealed, except where surface metal raceway systems are specifically noted on the plans or otherwise approved. Provide chases, soffets and boxouts, finished to match surrounding areas, as required.
- F. Splices shall be made only at device outlet boxes. Addition or re-use of boxes in finished areas solely for the purpose of splicing will not be accepted.
- G. Provide all traveler wiring required for three and four way switching.
- H. All wiring shall be new. Remove all existing wiring and raceways to the maximum extent possible. Cut back and abandon concealed wiring and raceways.

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- I. All conductors shall be neatly arranged and bundled, without excess cable at any point, but with reasonable slack to allow installation and removal of the device.
- J. Wiring shall be routed as required to minimize cutting and patching required. Devices shall be located to comply with code required locations, and to avoid field obstructions, and to comply generally with locations as shown on the drawings. The relocation of devices and related work within 10 feet of location shown on plans shall be included in the contract price.

3.11 GROUNDING

- A. Bond and ground equipment and systems connected under this Section in accordance with standards of MEC and other applicable regulations. Provide approved means for terminating and connecting grounding conductors, such as lugs, crimp-on terminals, green ground screws, grounding wirenuts, etc.
- B. Conduit system shall be electrically continuous throughout. Equipment frames, enclosures, boxes, etc. shall be grounded by use of green colored equipment ground conductor sized as per Table 250.122 of MEC. Raceway ground alone will not be accepted.
- C. Green bonding jumper shall be installed in flexible conduits.

3.12 MOTORS AND CONNECTIONS

- A. Motors will be provided under other Sections.
- B. Check electrical connections and sizing of motor circuit protection and prevent damage to motors and equipment from incorrect direction of rotation. Measure actual running load amperes of each motor, and select and provide properly sized overload element(s).
- C. Review existing conditions prior to disassembly/disconnection for verification of size, speed, and operation of existing motors.
- D. Consult drawings and specifications and shop drawings for verifications of size, speed, and operation of motors furnished under other Sections.
- E. Final connection to appliances and motors shall be made with flexible conduit (at least 16" long) with green ground wire installed.
- F. Obtain necessary control wiring and interlocking diagrams from equipment suppliers and connect equipment circuits for proper sequence of operation. Refer to sequence of operations provided under other Sections, and circuit equipment via control devices such as thermostats, relays, aquastats, contactors, etc.

3.13 WIRING DEVICES

- A. Mount all wiring devices plumb in device outlet boxes. Center devices on boxes, and set true within the device plate. Set device plates so all edges contact surface, and conceal box edge.
- B. Side wire devices only. Back wiring will not be accepted.

3.14 INSTALLATION OF LIGHTING FIXTURES

- A. Verify mounting construction, and provide fixtures, ballasts, frames, rings, mounting boards and other accessories suitable for construction encountered.
- B. Coordinate installation of fixtures with installation of casework materials and mounting system. Coordinate wiring stub out location, so as to maintain wiring to light fixtures effectively concealed.

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- C. Investigate lighting fixture locations and supports to ensure that no interference exists between lighting fixture, supports and other equipment. Correct interference as directed by Engineer.

3.15 CONTROL WIRING AND RACEWAYS

- A. Provide all wiring and terminations as required by the HVAC contractor, and to suit the specified Sequence of Operation, Control Block Diagram, and wiring diagrams prepared for the project.
- B. Control wire shall generally be minimum 300 volt rated, and shall be run in separate metallic raceways. Exposed wiring shall not be permitted.
- C. Where not provided integral to the device, provide an outlet box at each device to terminate device wiring. Where device does not have means to attach an outlet box, separately support an outlet box within 4 inches of the device, and route device wiring to the outlet box. Provide a bushing for wiring entering the outlet box from the device.
- D. Cooperate fully with the HVAC contractor during commissioning and make wiring and raceway adjustments as required to suit the required operation.

3.16 CIRCUIT BREAKERS

- A. Install circuit breakers in panelboards. Mark panel schedule accordingly. Panel markings shall be printed by typewriter, printer or other suitable means. Handwriting will not be acceptable. Utilized circuits shall be marked in ink. Spare or spaces shall be so marked in pencil, and may be marked by hand. No circuit shall be described in a manner that depends on transient conditions of occupancy.

3.17 KEY VAULT

- A. Securely mount key vault at location shown. Provide at least one (1) 3/8" through bolt, with 3" square steel plate on interior side. Also provide one (1) 3/8" anchor bolt to prevent spinning.
- B. Install key to exterior boiler shut-off switch padlock in key vault.

3.18 CUTTING, PATCHING AND PAINTING

- A. Perform all cutting as required for the installation of wiring, boxes, devices, etc. In finished or public areas, wood trim shall not be cut. Cut only plaster or wallboard surfaces. Cutting shall be done with suitable hand tools (not powered) to minimize dust. Protect adjacent areas from damage as a result of cutting operations. Do not cut areas which, in the opinion of the Engineer, will cause irreparable damage or condition. Cut openings to minimum size required. Cover openings which will be left open at the end of the work day or while the opening is otherwise unattended.
- B. Review with Engineer cutting means and methods, and cutting approach prior to commencing work. Once established, do not vary from cutting approach agreed upon.
- C. Dust from cutting shall be cleaned up immediately after a cut is made. Clean up shall be by vacuum cleaner and suitable dusting cloth. Provide cloth drop cloths over Owner possessions during all cutting. Carefully remove drop cloths to outdoor areas and shake clean prior to re-use. Replace or launder drop cloths no less often than daily. Upon completion of cutting, wipe all horizontal surfaces and any affected vertical surfaces clean. Clean-up of dust from cutting shall be to the full satisfaction of the Owner.
- D. Perform all patching required as a result of the Work of the Contract, including patching to areas inadvertently damaged by the Work, and unused openings. Small openings (less than 6 inches in all dimensions) shall be patched by installation and securing of expanded wire mesh lath backing in the opening and covering of joint compound or plaster mix. Larger areas shall be

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patched by removal of the surface back to existing studs or strapping, and installation of sheetrock, covered by joint compound or plaster mix. Tape seams in materials. Joint compound or plaster mix shall be installed in successive coats, with drying time as recommended by the product manufacturer between coats. Compound or plaster shall be feathered to existing surfaces. Patched surfaces shall be sanded smooth to match the existing surrounding surface. Sanding shall be by wet sanding methods (not wet sponge type) specifically intended for the purpose.

- E. Only the highest possible workmanship of cutting and patching will be accepted.
- F. Where existing devices are removed, repair the surface to match the surrounding surface completely. Patch as required, and touch-up paint. Blank device plates are not acceptable.
- G. Patched areas shall be touch-up painted. One coat of latex wallboard primer shall be applied to raw, prepared surfaces and allowed to dry. Two coats of enamel paint shall then be applied. Finish paint for touch-up painting shall be furnished by the General Contractor. Primer shall be compatible with the paint provided by the General Contractor.
- H. Do not paint unsuitable surfaces. Correct surface then paint. Clean up all drips, runs and spatters of paint immediately, before allowed to dry. Do not leave painting materials within units. Take materials in and out of units as painting progresses. Provide "Wet Paint" signs to protect freshly painted surfaces, left in place until surface has cured. Repair any touched up surfaces which may be inadvertently disturbed by Owners personnel.

END OF SECTION